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BLUE JAY

June 1980

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Editor: Gary W. Seib

Associate Editors: Margaret Belcher, J. Bernard Gollop, George F. Ledingham.

Editorial Assistants: Georgina Jackson, Shirley Jowsey, Barbara Shourounis.

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Cover: *White-rumped Sandpiper.* *Wayne Renaud*

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LARRY ALBERT MORGOTCH: IN MEMORIAM

FRANK A. SWITZER, 1301 Shannon Road, Regina, Saskatchewan, S4S 5K9.

Larry Morgotch was one of those rare people who in a quiet and unassuming way manage to influence the ideas of others. Few who knew him well were not in some way influenced by his philosophy of life and nature. Larry used a double-barrelled approach. If he couldn't persuade you with words he would do it with pictures. Past issues of the *Blue Jay* contain both articles and pictures by this observant and quietly persuasive naturalist.

Larry was born at Hyas, Saskatchewan, into a farming family, at a time when people were somehow much closer to the land than most are now. During his "growing up" years he developed an interest in natural history. During this time he made several trips into the Porcupine Hills with his father and friends. One such trip, which he recounted most vividly, was made in a wagon drawn by a Fordson tractor. The trail was arduous, many fallen trees had to be cleared and some boggy spots required the building of a corduroy road. Though the trip was ostensibly for fishing purposes, Larry said he was intrigued with the difference in the country. There were different birds, animals and plants all around. The appeal this upland held for him prompted him in later years to take a job in the hills as patrolman with the Department of Natural Resources.

I was fortunate to accompany Larry on a trip to these hills. Though they were not entirely strange to me, I gained new insight into the history and wildlife of the area through that brief visit with Larry.

People often find it strange that someone can have two interests that are widely divergent. Larry was a well-trained and skilful mechanic as well as being a knowledgeable naturalist. His mechanical training was obtained at the Moose Jaw Technical School. He moved to Yorkton in 1955 and in subsequent years worked for several garages and automotive dealerships before he took up a service station franchise in 1967. Since 1970 he operated the Downtown Gulf service station. His customers will miss his integrity and mechanical skill as much as his naturalist friends will miss his skill as a keen and astute observer of wildlife.

In 1966 Larry married Delores Procyshen of Yorkton.

Larry was interested in natural history in a very broad sense. He was not just a bird or animal counter, but an observer of nature. He possessed a very keen eye, probably due to a hearing disability he suffered from. The fact that he saw a particular species of bird or animal was not enough for him. He would spend considerable time sitting and watching what he saw, trying to find out how it related to its habitat and environment. He was not satisfied until he knew how the bird or animal related to others of its kind, what it fed upon, its comings and goings, how it lived and how it died.

Through a well-developed skill as a wildlife photographer Larry could show others how he felt about nature. How a pair of foxes raised their kits,

Larry Morgotch *Ralph Morgotch*

how a Great Blue Heron colony functioned, how the muskrat lived, how a Great Horned Owl protected her eggs through March blizzards. I mention only a few examples, for it would take a whole volume to describe Larry's many picture stories.

Field trips with Larry were never a dead loss. If bird or animal photography was not productive, he would observe and if that was not satisfactory, he would find interest in something else. Often this meant heading for some open field where soil had been eroded. There, crossing and re-crossing the terrain, he would usually find native artifacts. Larry's collection of arrowheads, scrapers and stone hammers gave him great satisfaction. Invariably, upon making a find, he would puzzle about the person who made it and how it had been used. These scattered artifacts found in open fields tell little about the hunt. They do, however, indicate the culture of the person who did the manufacturing.

Larry was active in wildlife and conservation societies. He was a member of the Yorkton branch of the Saskatchewan Wildlife Federatior He was also one of the guiding hand that reactivated the Yorkton Natura History Society in the 1960's, and h was always a staunch supporter c the Saskatchewan Natural Histor Society. The last occasion that spent time in the field with Larry wa at the S.N.H.S. summer meet a Eastend. Since moving away fron Yorkton I had not had the opportunit to walk, look, and talk with Larry. W spent considerable time along wit other friends on that occasio watching Prairie Falcons at an eyrie It was while sitting on a hill watchin the falcons that we decided that w should get together in the spring c 1980 and come back to the Easten country to photograph Sage Grouse That plan was never to be carrie out.

I spent several evenings i Saskatoon with Larry in a Universit Hospital room in December 1979. was then that we realized that w would not sit together on some sage covered knoll in the spring. We woul never be able to squint through ou telephoto-equipped cameras an together picture the courtship activities of the Sage Grouse.

On 28 January 1980 cance claimed Larry's life, but it did nc claim his memory or his soul. Th first lines of the Twenty-third Psaln printed in his funeral card are mos appropriate:

> The Lord is my shepherd, I shall not wan
> He maketh me to lie down in gree
> pastures; He leadeth me beside the sti
> waters. He restoreth my soul. . . .

Larry is survived by his wif Delores, his son Ralph, his Mothe and sisters Irma, Sandra, Beatric and Roslyn. He will be remembere by his many friends in the Yorkto and Saskatchewan Natural Histor Societies.

WILDLIFE CHANGES IN SOUTHEASTERN SASKATCHEWAN

HARRY A. STELFOX, 6232 - 127th Street, Edmonton, Alberta, T6H 3W9.

Historical changes in game populations over the last 100 years have been evaluated as part of an inventory of wildlife habitat made in southeastern Saskatchewan.[26] This study has helped us to understand more fully the nature of present populations and to predict future trends. Prior to the early 1800's animal populations were little influenced by man, but fluctuated naturally in response to changes in climate and habitat conditions. With the coming of the fur trade and subsequent land settlement, much more substantial and permanent changes in numbers and distribution occurred.

The area that I am reporting on in this paper is the hilly Moose Mountain Upland and the gently undulating Souris River Plain (Fig. 1). The hummocky "knob and kettle" topography of the central portion of Moose Mountain has a scattering of ponds and lakes left from the melting of glacial ice some 20,000 years ago.[16] It is now largely an aspen-covered area, contained within Moose Mountain Provincial Park. The steep-sloping southern escarpment of the Upland supports open prairie grassland, cut by shrub and tree-filled coulees. The plains to the south and east have fertile black soils which are largely cultivated for the production of annual grain crops and perennial tame grasses. The remaining is that of the native vegetation, mixed-grass prairie and aspen parkland. The study area embraces portions of three major valleys through which flow the Souris River, Pipestone Creek and Moose Mountain Creek. Numerous shallow ponds and sloughs are scattered through the farmlands.

Pre-Settlement (prior to 1880)

Prior to settlement the Souris River Plain was dominated by a treeless mixed-grass prairie. Owing to frequent prairie fires, woody vegetation usually disappeared except in moist depressions, sloughs, drainage systems and valleys. Moreover, Indians "fired" the prairie on a regular basis to influence American bison* movements and range conditions.[10 18] The central Moose Mountain Upland and the north-facing slopes of the Pipestone Creek and Souris River valleys provided the only substantial woody cover in the area. Vast herds of bison and many smaller bands of pronghorn called "cabri" in the early days, were the dominant ungulates.[10 25 18] White-tailed jackrabbits, badgers, red and swift foxes, coyotes, ground squirrels, Upland Sandpipers, grassland passerine birds and Sharp-tailed Grouse were also typical prairie species.[24 19 27] Muskrats, Sandhill Cranes, Whooping Cranes and a variety of ducks and other marsh birds occupied the numerous prairie sloughs.[17] Ferruginous and Swainson's hawks, Golden Eagles, Common Ravens,[13] and Turkey Vultures were common predators and scavengers. Wapiti

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*The common names of mammals referred to in the text follow those used in *The Mammals of Canada*.[3]

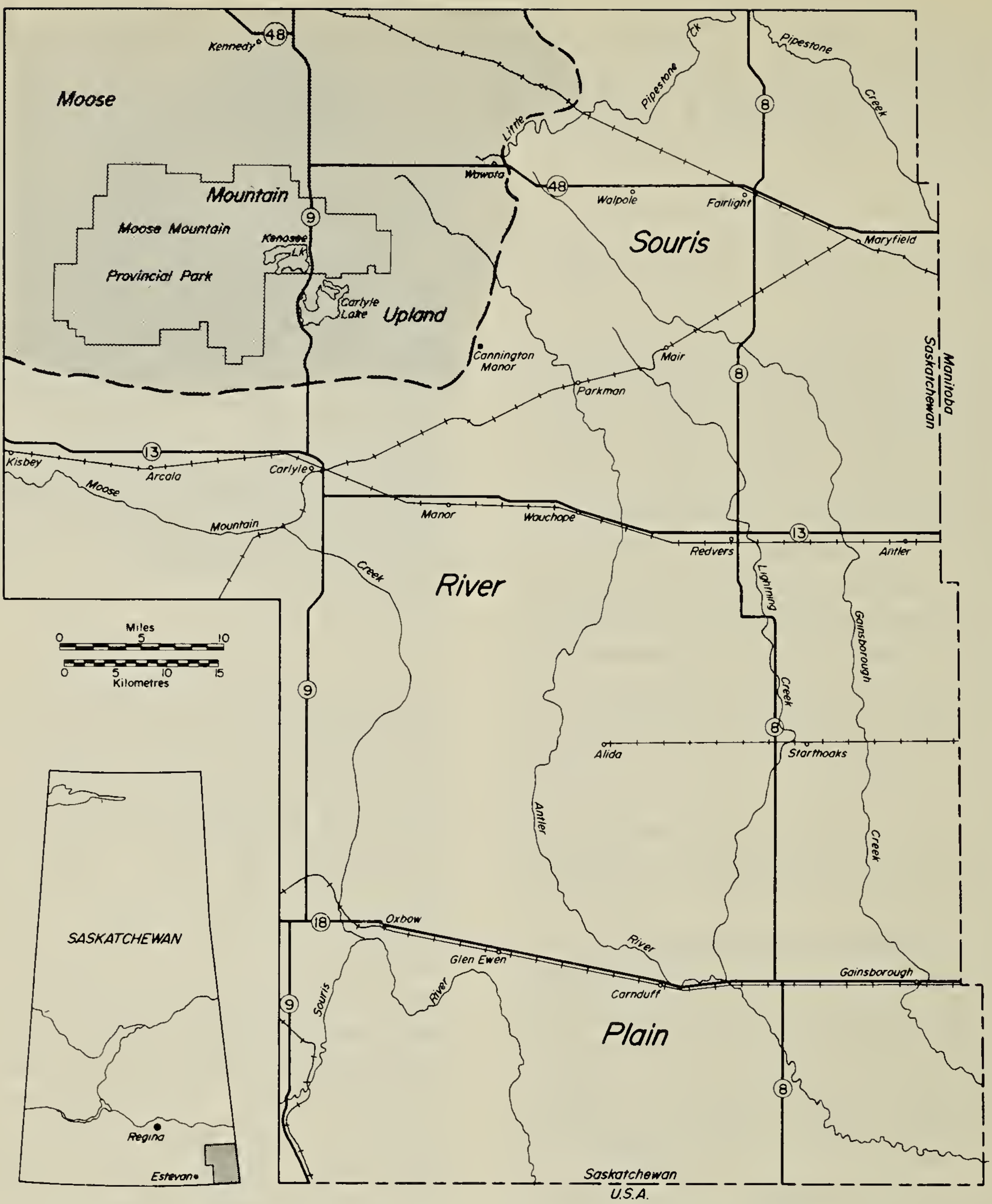

Figure 1: Study area located in the southeast corner of Saskatchewan.

(elk), moose, mule deer, mountain lions (cougars) and black bears stayed closer to the wooded portions of the Moose Mountain Upland and the Pipestone Creek and Souris River valleys. White Pelicans, Double-crested Cormorants and Great Blue Herons frequented the secluded lakes of Moose Mountain. Other species which were no doubt also former residents of the area, given their known earlier breeding range and habitat preferences, included wolves, grizzly bears, wolverines, river otters, Trumpeter Swans, Bald Eagles and Passenger Pigeons.[29 6 7 3 27]

1880 to 1900

Bison declined rapidly during the mid-1800's as a result of excessive hunting.[18] The last one in the area was reported to have been killed by 1881.[9] Hunting pressures then shifted to other big game species. Moose reportedly disappeared from Moose Mountain in the late 19th cen-

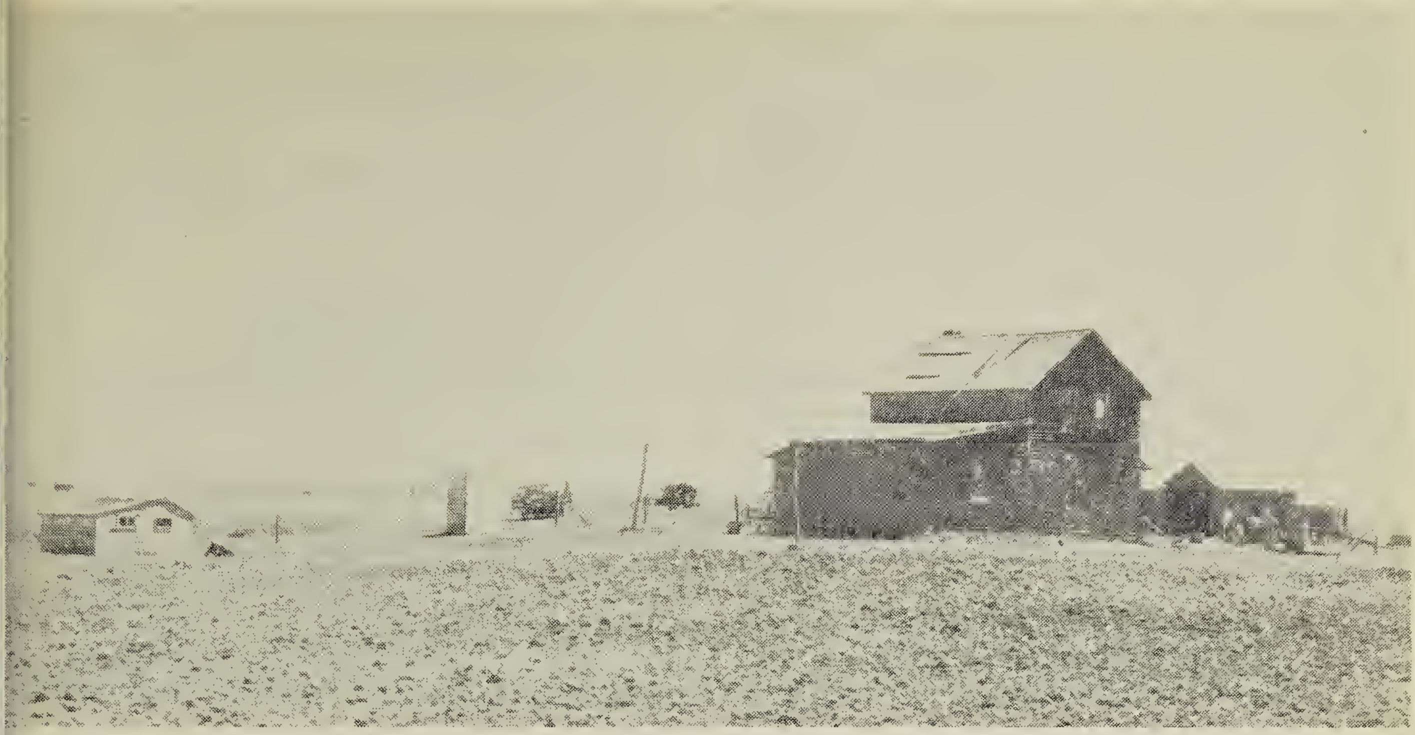

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Figure 2: Farmstead on predominantly treeless prairie around the 1920's.

tury, perhaps as a result of both organized drives and hunts by bands of Indians from the surrounding territory[11] and an extensive fire that burned off much of the tree cover in 1894.[9] An early settler reported that in 1882 elk, deer, a few bears, beavers, lynx, muskrats, mink, fishers, and foxes, occurred in the Moose Mountain area, but that there were no moose.[8]

1900 to 1920

The early 1900's were noteworthy for the general absence of big game, particularly in the open treeless plains (Fig. 2). Pronghorns were still present but in very diminished numbers as settlement and agricultural development became widespread and pushed them back towards the less arable rangeland to the south and west. Deer (principally mule deer) were uncommon and largely restricted to the rugged and partially wooded river valleys and Moose Mountain Upland. The first white-tailed deer to occur in the area probably moved in along the wooded river valleys from adjacent Manitoba and North Dakota during this period.[4]

On Moose Mountain, elk were reported to be uncommon but still more numerous than deer, whereas muskrats, mink, weasels, striped skunks, coyotes, snowshoe hares, red squirrels and Sharp-tailed Grouse were abundant. Beaver populations were still depressed as a result of excessive trapping. Ruffed Grouse were reportedly common in the Pipestone Creek Valley but may have been less so in Moose Mountain until the aspen forest became more mature. A few moose reappeared in the Upland during the 1910's.[9]

Jack rabbits, foxes and badgers were more common in the surrounding plain. Sharp-tailed Grouse were very abundant and the Greater Prairie Chickens were common and widespread at this time. One early resident reported that Sharp-tailed Grouse dancing grounds were on nearly every quarter-section of land in the Parkman area. Greater Prairie Chickens did not occur in Saskatchewan prior to the 1900's but moved in with early settlement.[29] [2] [7] The temporary success of this bird coincides with a period when native prairie vegetation was particularly luxuriant, with taller grass species favoured. Fire had been largely checked by early settlers and grazing pressure by wild game and livestock was minimal, as bison had been eliminated and cattle were still not numerous.[21] Ducks were abundant and Sandhill Cranes were still common, nesting in the numerous potholes; however, Whooping Cranes now appeared only during migration.[22] A few grey foxes were trapped in 1914 northeast of Carnduff and eastern cottontail rabbits were reported from the Storthoaks area about this same time.

1920 to 1940

During the 1920's and 1930's several wildlife species increased in numbers while a few others virtually disappeared. With land settlement and the curtailment of prairie fires, aspen "bluffs" sprung up on uncultivated lands and were soon occupied by white-tailed deer.[20] By the late 1930's whitetails were common, being well adapted to agricultural settlement wherever there was sufficient woody cover. In contrast, the mule deer's preference for more open terrain and susceptibility to hunting pressure kept populations low and restricted to the more rugged and hilly terrain.

Greater Prairie Chickens declined as rapidly as they had arrived about 30 years earlier[7] and were apparently gone from the Storthoaks area by the late 1920's. Similar declines were observed in the crane populations, with the last regular migrant Whooping Cranes observed in the late 1920's.

The first Gray (Hungarian) Partridge and Ring-necked Pheasant appeared in the Redvers-Wawota area during the 1920's before an known stocking programs were undertaken.[20] Houston[12] reported tha Hungarian Partridge spread naturall from Alberta, where they were initially released in 1908, to Saskatchewan, reaching "beyond Carlyle t the Manitoba boundary" by 1927 Huns survived well and were reported as locally abundant in the 1930's whereas Ring-necked Pheasant temporarily disappeared for severa years after their initial appearance.

Sharptails were still very abundan and benefitted from the large amoun of "go-back-land" during the 1930' when drought conditions caused many farms to be abandoned and revert to weeds and native vegetation. These drought conditions were not favorable to waterfowl and muskrats as a high proportion of the wetlands dried up. During this period coyotes became very abundant, apparently favoured by increased woody cover, whereas red foxes declined.

Moose Mountain Provincial Park was established in 1931 and provided the additional protection needed for moose, elk and beaver populations to recover.[15] Elk were already benefitting from a province-wide closure of hunting since 1919[1] and herds of 30 to 40 animals were common by the mid-1930's. Beaver populations had previously been virtually wiped out by over-trapping so stocking programs were used at Moose Mountain to aid their recovery. Nesting populations of Common Loon, Double-crested Cormorant and Great Blue Heron occurred in the park during the mid-1930's and White Pelicans were also frequently observed, although not known to nest.

1940 to 1960

During the 1940's and 1950's

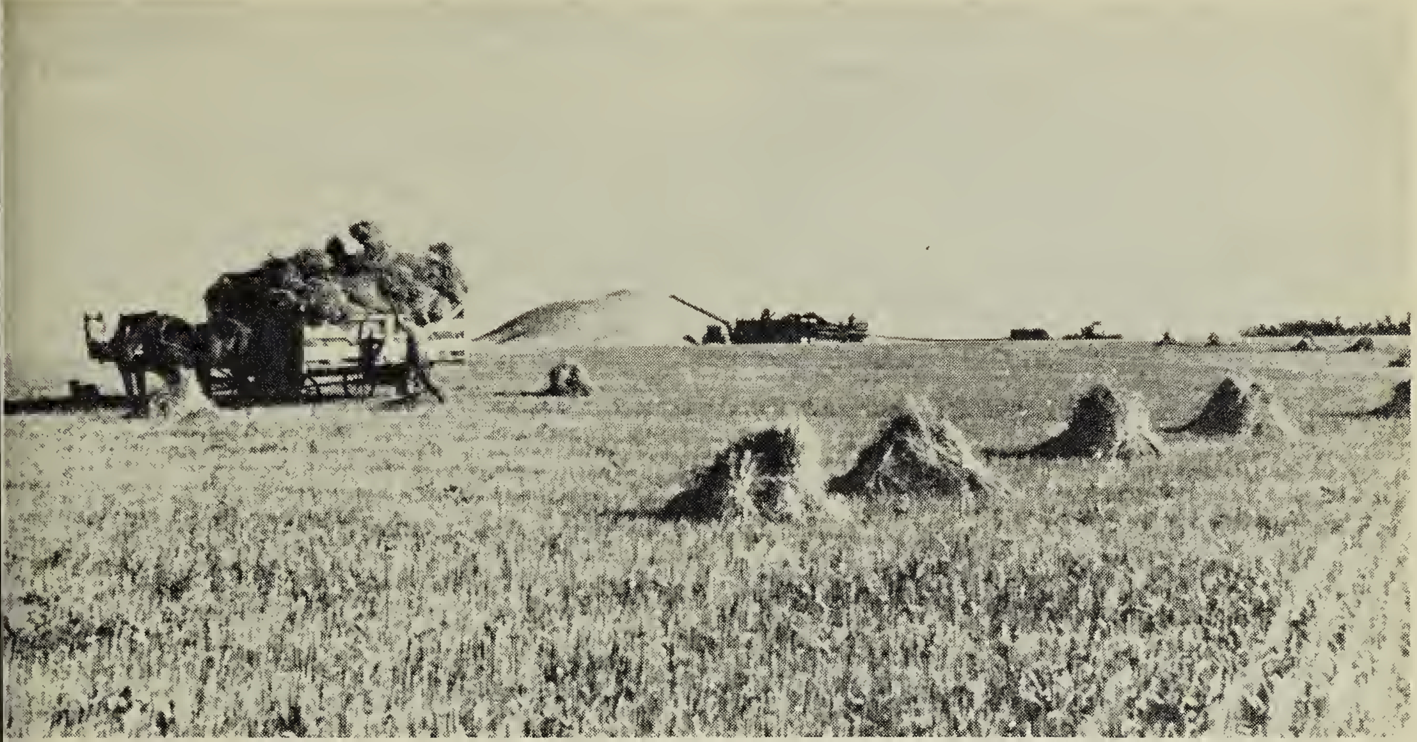

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Figure 3: Grain sheaves and straw piles, representing harvest techniques before combines appeared, provided valuable food and cover for upland game birds.

white-tailed deer greatly increased in number and distribution, continuing to benefit from the spread and development of aspen parkland. Deer also benefited from the large amount of farmland abandoned during the drought of the 1930's and left idle until the late 1940's and early 1950's. Some residents feel that whitetail populations probably peaked during the 1950's. Porcupine also benefited from increases in woody vegetation and became quite conspicuous during this period.

Red foxes gradually returned in abundance, while coyotes were depleted by an intensive poisoning and bounty program following World War II.[28] Raccoons first appeared and were reported in the Storthoaks area as early as 1942. They may have benefited from decreased coyote populations and the numerous brush and root piles associated with clearing operations. Jack rabbits were extremely abundant during the early 1940's at which time organized drives were made to capture them. The first grey squirrels in the area were reported along the lower Gainsborough Creek in the 1950's.

Ruffed Grouse became more abundant in the farmland as trees matured. Ring-necked Pheasants were only locally common and were sustained largely by stocking programs, whereas Gray Partridge were fairly abundant and widespread. Both species benefited from the abundance of cover along roadsides, fencelines and shelterbelts. Sharptails remained abundant, particularly during the 1940's when grain sheaves, threshing and straw piles were still prevalent (Fig. 3). However, a gradual but permanent decline in Sharptail populations appears to have occurred during the 1950's as native grassland was further reduced by cultivation and the continued invasion of woody growth. Also, the combine was introduced as a more efficient means of harvesting cereal grains, leaving less waste available to game birds.

The very wet years of the 1950's reduced upland game bird nesting and fledgling success but greatly increased waterfowl production.[28] However, the previous burning and grazing of marshes and draining large sloughs had already spelled the end of nesting by Sandhill Cranes and they were now observed only during migration.[22]

1960 to 1979

During the 1960's and 1970's the natural increase in tree growth was reversed by intensive, highly-mechanized farming practices which removed the small patches of native vegetation as well as many of the quarter and half-sections which had never been broken[7] (Fig. 4). Tree cover on five unbroken parcels of land totalling 2¼ sections in the Parkman-Maryfield area averaged 31% in 1949 and 48% in 1970 representing a 1.7% increase per year[26] (Figs. 5 and 6). However, that portion of the occupied farmland in the Redvers-Maryfield-Kelso area which still remained in native vegetation declined from 38% in 1949 to 28% in 1977, representing a 26% decline in total or 0.9% per year. The 1970-77 average rate of loss to cultivation was even higher at 1.6% per year. At the same time large machinery drained or filled many of the wetlands.

These habitat alterations have resulted in a widespread and apparently permanent decline in upland game bird and waterfowl populations. Upland game birds feeding on waste grain were also hit by the extensive use of grasshopper poison and mercury seed dressings[5] in the 1960's which resulted in substantially lowered reproductive success. With curtailment in the use of these toxic substances during the 1970's game bird numbers recovered to a considerable extent with Sharptails being quite abundant and Huns com mon. Ruffed Grouse recently peake (1976-78) in their 10-year cycle an were reported to have been mor abundant in the Storthoaks area tha at any time during the previous 6 years. However, Ring-necke Pheasant populations have remaine very low with average winter weathe conditions likely being too severe.

Long term population trends fo white-tailed deer are not so clea Mortality was very high during th severe winter of 1973-74.[25] Howeve populations recovered quickly wit the aid of two mild winters.[26] The con tinued loss of suitable native habita has caused whitetails to feed mor and more on agricultural crops dur ing the winter season. Mortality o reduced productivity from sever winter weather is potentially muc greater now as suitable blocks o cover within agricultural areas (nativ aspen parkland one-quarter sectio or more in size) become fewer an farther apart.[26]

Grey squirrels first appeared in th Storthoaks area in the 1960's an became fairly common in the 1970's Coyotes have continued to decline i recent years as the result of heav hunting and trapping pressur whereas red fox populations ar recovering. Lynx are not known to b permanent residents of the area bu occasionally move in from the north Frequent sightings were made in th early 1970's and two were shot nea Moose Mountain in 1970 and anothe two near Storthoaks in 1974 Cougars are still occasionally sighte in the Moose Mountain area (T White, pers. comm.) and both adult and young of the year were observe near Antler in 1970 and 1972.[30]

In the Moose Mountain Upland moose and elk numbers hav stabilized[26] as a result of carefull managed harvests. Beaver hav

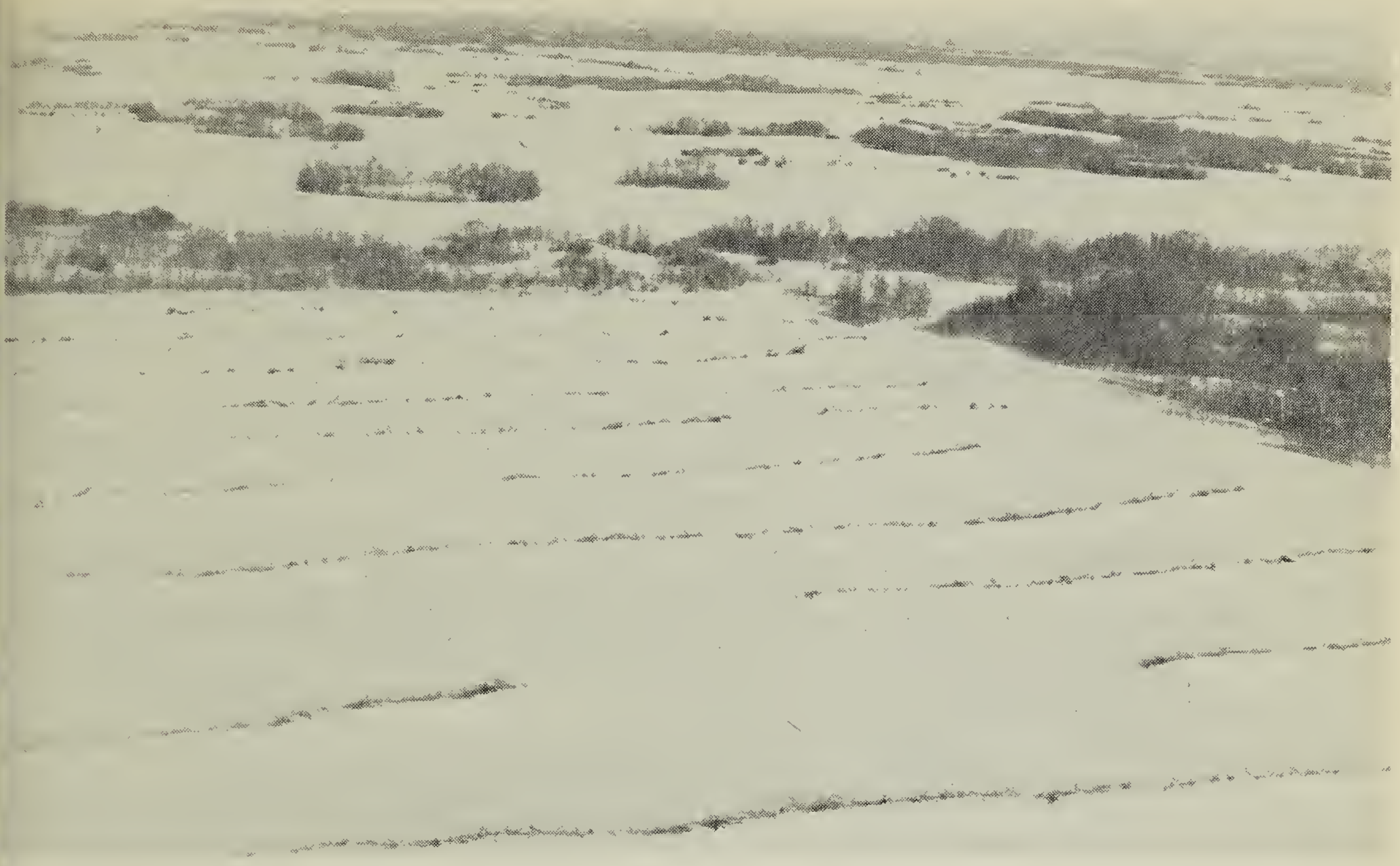

Figure 4: Brush windrows from recent (1978) bulldozing of aspen stands in southeastern Saskatchewan.

been lightly harvested during the past 10 years and populations are now very high in the Park.[15] Turkey Vultures still occur and an active nest was located in 1978. Nero and Lein[19] found no evidence of White Pelicans or Double-crested Cormorants nesting in Moose Mountain during the late 1960's, whereas two Great Blue Heron colonies were still active in 1979.[26]

Summary and Conclusions

In the space of 100 years the change in wildlife numbers and distributions has been very dramatic in southeastern Saskatchewan (Fig. 7), as throughout the intensively settled and developed regions of southern Canada. Numerous species including bison, pronghorns, swift foxes, White Pelicans, Double-crested Cormorants, Whooping and Sandhill Cranes, Long-billed Curlews and Common Ravens are no longer residents of the area. Greater Prairie Chickens made a brief appearance, arriving around 1900, and disappeared some 30 years later. In contrast white-tailed deer first appeared during the early 1900's and stayed to become abundant and widely distributed up to the present day. Also the exotic Gray Partridge and Ring-necked Pheasant first appeared in this area during the 1920's and have persisted, with the latter species aided by periodic stocking programs. Many other species have seesawed up and down in numbers in response to climatic changes, hunting, trapping and poisoning, and various other land use practices.

Most of the early wildlife declines were due to heavy hunting and trapping pressures. Population changes following early agricultural settlement reflected in some cases continued hunting and trapping pressures as well as climatic variation, but in most cases resulted from major alterations in the extent and distribution of natural

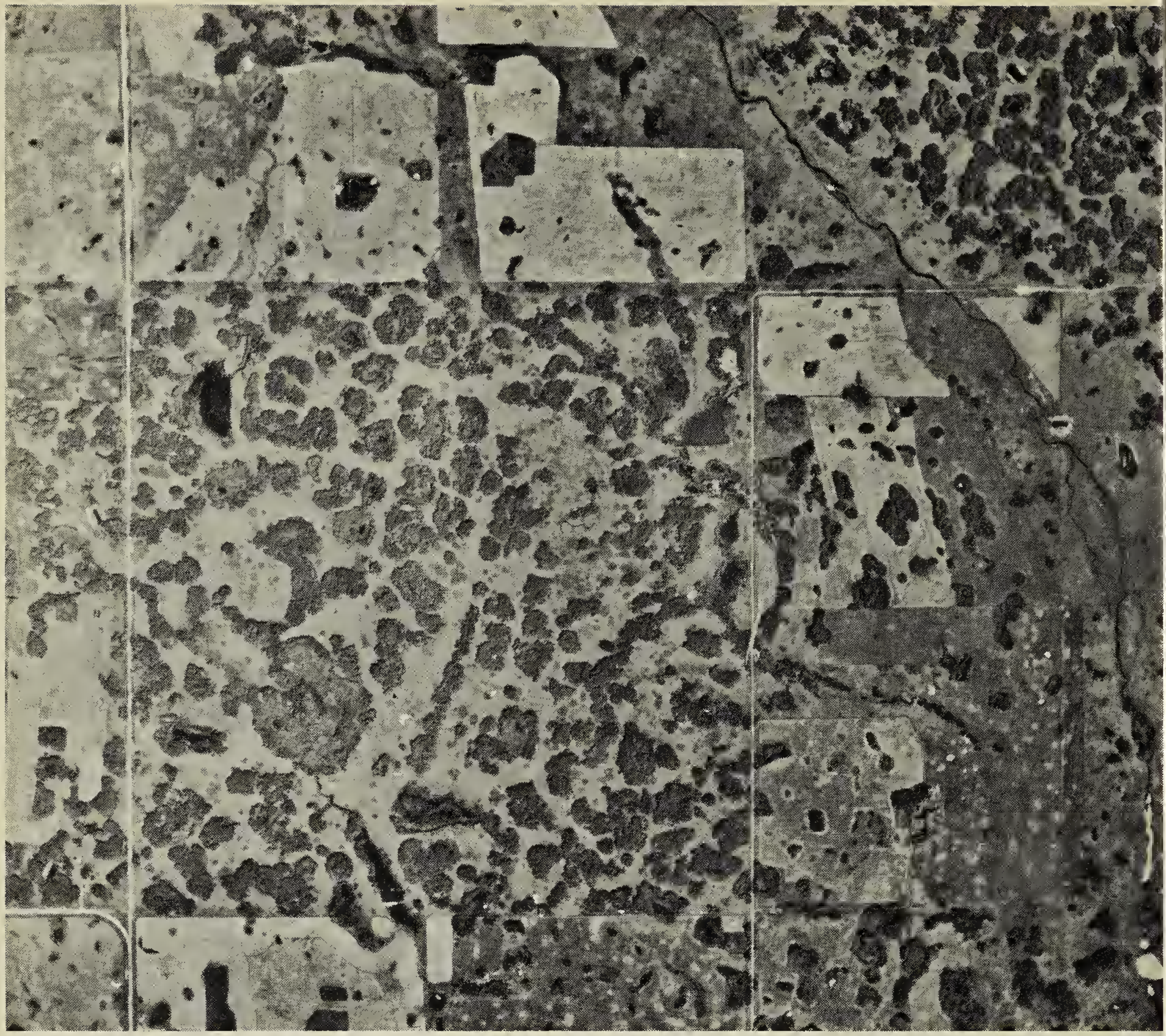

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Figure 5: Aerial photo from 1949 of Sec. 29 - Twp. 10 - Rge. 30-W1, one mile north of Maryfield. Dark patches represent aspen bluffs.

vegetation. Fire was curtailed, grazing pressure was altered, woody vegetation invaded grassland, prairie was cultivated, wetlands were drained and filled, and brush was cleared. The eventual trend was towards a more homogeneous and simplified environment which no longer had the capability to support the same variety and numbers of wildlife as in former times.

Most wildlife species for which we have data are currently below previous population levels (Fig. 7). Continued agricultural developments which result in the further removal of natural vegetation and the creation of a less diversified landscape will probably result in the continued decline and possible disappearance of more wildlife species. With the aid of past observations and experiences a long term strategy for the future must be developed whereby we secure the essential wildlife habitat mosaics which still remain and restore some of the natural diversity which we have lost.

Acknowledgements

Thanks to G. Duff who drafted the figures and J. B. Gollop, C. S. Houston and G. W. Pepper who reviewed several drafts of the

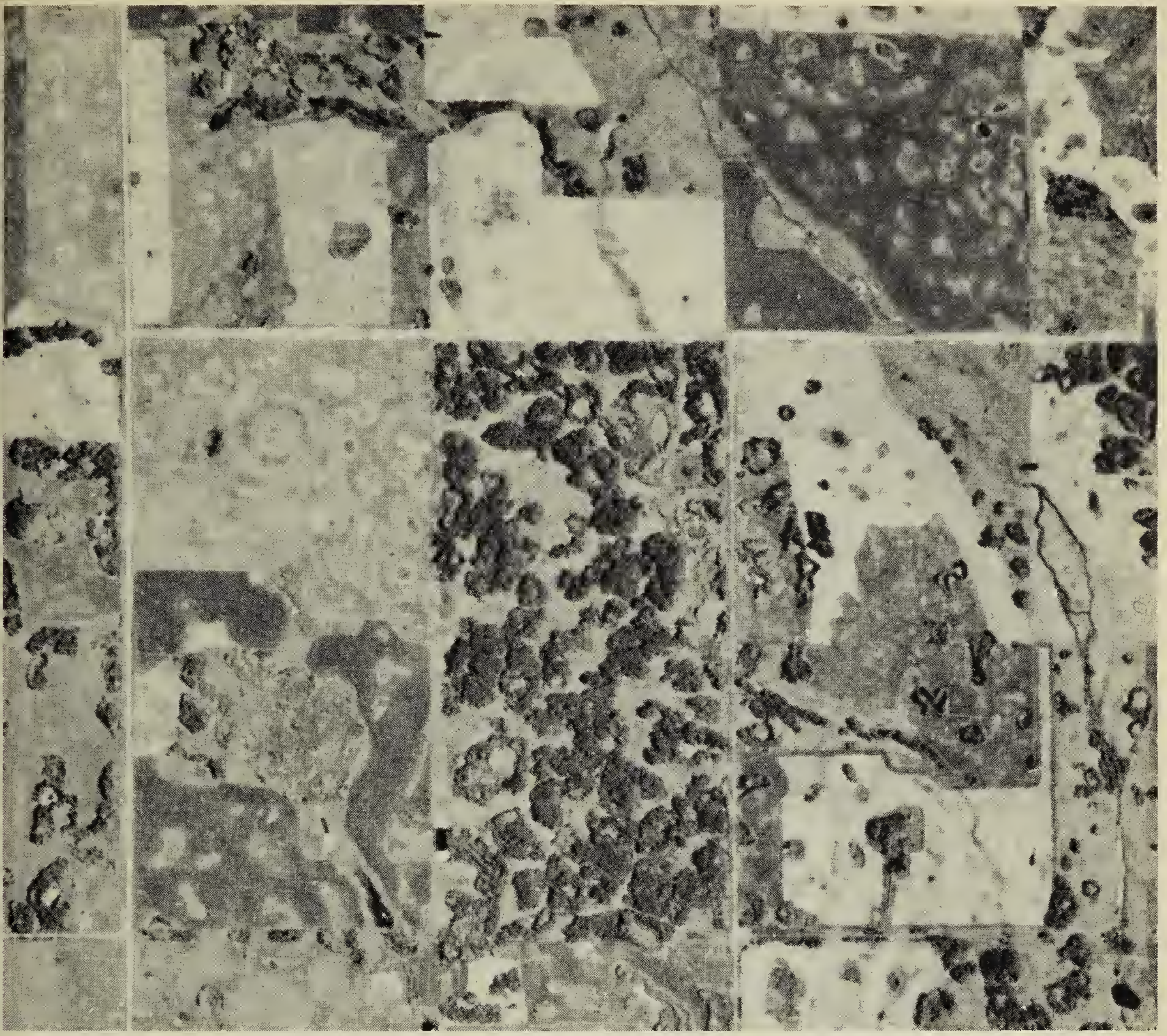

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Figure 6: Aerial photo from 1970 of the same parcel of land shown in Figure 5. Note the removal of aspen and increased area of cultivation, as well as increases in the size of aspen bluffs which were not cleared.

manuscript. Also a special thanks to the numerous residents of the study area who provided the author with personal observations of wildlife and land use changes since early settlement: F. Baran, R. Barber, H. Coté, K. Cummins, A. Dennis, L. Dennis, W. Hill, J. Lees, D. C. McCormick, W. Mills, H. J. Munro, K. Racz, F. Thompson, E. J. Turton, H. Weatherald, T. White, T. Wilson. E. Kennett was particularly helpful in arranging several interviews.

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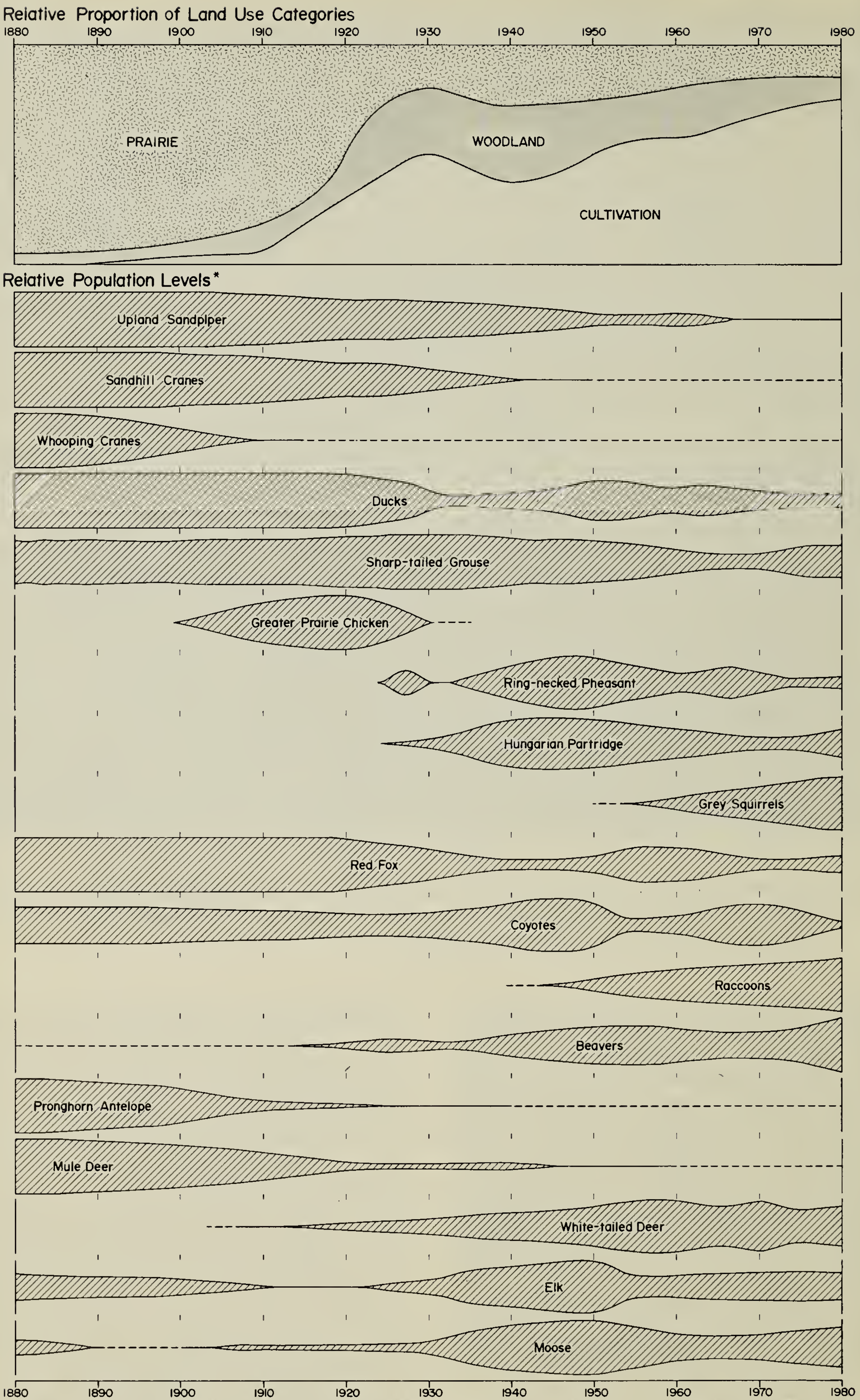

*Population levels are relative only within an individual species. The highest population level is assigned to each species at it's known or suspected maximum within the 100 year period.
— — — Seasonal or occasional occurence

Figure 7: Diagramatic summary of relative changes in land use and wildlife populations in southeastern Saskatchewan from 1880 to 1980.

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SEMI-DOMESTICATION OF BUMBLEBEES IN SASKATCHEWAN

PHILIP CURRY, Agriculture Canada Research Station, Box 1240, Melfort, Saskatchewan S0E 1A0, and JOHN DALGLEISH, Melfort, Saskatchewan.

Bumblebees are widely distributed in the northern hemisphere, some living as far north as Ellesmere Island in Canada's arctic. They are most abundant both in number of species and number of colonies in the north temperate zone. North America has about 50 species or subspecies, of which 19 have been found in Saskatchewan (Table 1). The greatest concentration of bees occurs in the aspen parkland areas. Fewer species exist on the prairie, and they are more scattered.

Life Cycle

Bumblebees are social insects like honeybees. Each colony has one queen who produces workers in summer and drones and new queens in early fall. The new queens mate, spend the winter in hibernation, and start new colonies the following spring. Some species build their nests underground. Others build in the shelter of a carragana hedge, or in rock piles, or beneath old piles of lumber.

The general biology of bumblebees has been well outlined by Free.[1] The mated queen emerges from hibernation, between early spring and early summer, depending on the species. During the next few weeks she consumes nectar and pollen from early flowers (willow, dandelion, carragana). When she emerges from hibernation, her ovaries are small and threadlike, but after several weeks of feeding they become enlarged and the first eggs develop. Now the queen may be seen flying low over undisturbed ground along hedges, banks or untended areas in search of a suitable nesting site. Most often the site selected is an abandoned nest of a mouse or bird, and consists of an accumulation of grass, moss or leaves.

After selecting her site the queen forms a hollow in the center of the material which was accumulated there and during the next few days she makes a clump of pollen on the cavity floor and builds a wax cup on top of it in which she lays eggs; she then seals the top of the egg cell with more wax and constructs a wax honey pot, which she fills with honey as a reserve in case of inclement weather.

When the larvae hatch, they feed on their bed of pollen and on nectar and pollen which the queen regurgitates to them through temporary breaches that she makes in their wax covering. As a result they grow rapidly and the queen keeps adding more wax to their covering so they remain completely enclosed. After about ten days the larvae spin their cocoons and pupate. The queen removes the wax from the outside of the cocoon and uses it to make egg cells on top of them.

The development of egg to adult bee takes 3-4 weeks depending on the environmental temperature and food supply. The size of the workers depends on the amount of food they receive in the larval stage; since spring forage may be in short supply, and the queen must collect all the

TABLE 1: Occurrence of bumblebees in Saskatchewan.

Bombus	Distribution
B. appositus Cresson	— prairie areas, rare
B. bifarius bifarius Cresson	— woodland, rare
B. borealis Kirby	— woodland-prairie, common
B. californicus Smith	— woodland, rare
B. centralis Cresson	— woodland, rare
B. frigidus Smith	— woodland, rare
B. fervidus fervidus Fabricus	— prairie, common
B. huntii Greene	— prairie, common
B. nevadensis nevadensis Cresson	— woodland-prairie, common
B. perplexus Cresson	— eastern woodland, common
B. rufocinctus Cresson	— woodland-prairie, common
B. ternarius Say	— woodland-prairie, common
B. terricola occidentalis Greene	— woodland-prairie, rare
B. terricola terricola Kirby	— woodland-prairie, common
B. vagans vagans Smith	— woodland, common
Psithyrus	
P. ashtoni (Cresson)	— eastern woodland-prairie, rare
P. fernaldae Franklin	— woodland, rare
P. insularis (Smith)	— woodland-prairie, common
P. suckleyi (Greene)	— woodland-prairie, common

food herself, the first workers are smaller than those produced later.

At first, the new workers help the queen to forage for food and rear fresh broods, but soon they take over foraging entirely. The queen remains in the nest, laying successive batches of eggs and helping to rear the brood.

In northern areas the size of a bumblebee colony at the climax of its development is relatively small. Depending on the species and environmental factors during development, anywhere from 10 to 400 bees may be produced in a single season; a colony of 30 to 50 is more usual for northeastern Saskatchewan. At the climax of colony development, male bees are produced from unfertilized eggs and queens, like workers, are produced from fertilized ones. Externally, queens look like very large workers. Males leave their nests when they are a few days old and seldom return, but young queens remain close to the nest for some time. Mating generally takes place on the wing, and a queen may mate several times. After mating they feed liberally on both nectar and pollen and store large reserves of fat in their body. At this time they often forage for their maternal colony. Early in fall they go into hibernation. Most species bury themselves a few centimeters beneath the soil or beneath leaves or other matted vegetation. Less commonly, other sites may be chosen.

Bumblebees are extremely efficient pollinators, but they are usually too few in number to pollinate large areas of agricultural crops. Their numbers fluctuate from place to place and from year to year so that even though they are abundant one year they may be scarce the next. Because of their value to crops, scientists have looked for ways to rear bumblebees in artificial nests to increase the population in an area or to obtain colonies which can be moved.

Modern agricultural production methods have been a mixed blessing for bumblebees. On the one hand natural nesting sites such as shelterbelts, banks, and aspen bluffs disappear as the size of field units are increased. Herbicide usage destroys many weeds which are important sources of food to bees, especially just after they have emerged from hibernation. Insecticides, if applied to crops in flower, may kill the visiting queens and prevent the establishment of colonies. On the other hand, seeding large fields to legumes or other flowering crops provides a large food supply in a small area and maintains the wild bee population. In northeastern Saskatchewan, bumblebees are important for pollinating red clover fields.

Interested persons can successfully increase nesting sites for bumblebees around farms or in town, or obtain colonies for biology classes in schools and colleges by using simple equipment and techniques developed by scientists. Two methods have been used: some researchers have captured queens in spring and have persuaded them to nest by confining them for a period in hives with food and nesting material.[7 3 10] Others have set out hives containing nesting materials in suitable habitats and permitted queens to colonise them.[2 5] Our work in northeastern Saskatchewan has used the second method to obtain colonies for pollination and population studies.

Nest box Construction

The nest boxes we use are similar to those described by Hobbs et al[5] (Fig. 1). They are constructed from 1.3 cm (½ inch) plywood with inside dimensions of 18 x 15 cm (7 x 6 x 6 inches). A 3.2 x 4 cm (1¼ x 1½ inch) block of wood 13 cm (5 inches) long is glued or nailed vertically to the inside of the short side of the box. An entrance hole 14 mm (9/16 inch) is drilled in the middle of the short side of the box and through the inside block of wood. The entrance should be at an angle either upward or downward. Entrance holes of this type and dimension have proved extremely resistant to mice. A roof, 20 x 27 (8 x 10½ inches) is fastened to the box with either eye-screws or hinges. A screened ventilation hole is provided somewhere near the top of the box. Finally the outside of the box is painted with a light and heat reflecting paint such as silver or white. Black strips, dots or circles should be painted around the entrance hole to aid in the orientation of the bees.

Placement of nest boxes

The hives should be lined with 1.37 cm (½ inch) thick layers of upholsterer's cotton (Fig. 1) and set out in early spring before the leaves appear on the trees. Above-ground nests are nailed to stakes and positioned at least a few centimeters above the soil surface. They should be located in sites that bees frequent and preferably be near sources of abundant forage plants. They should be placed in groups beside aspen-groves, along fences, rock piles, tree shelterbelts, hedges or creek banks. Abandoned farmsteads are often good locations. It is important to orient the entrances to face in different directions and to place each nest near some identifying landmark or the queens may enter each other's nest in error, and this may cause fighting. Once the boxes are sited, do not alter their position. North facing exposures or those exposed too much to wind and sun should be

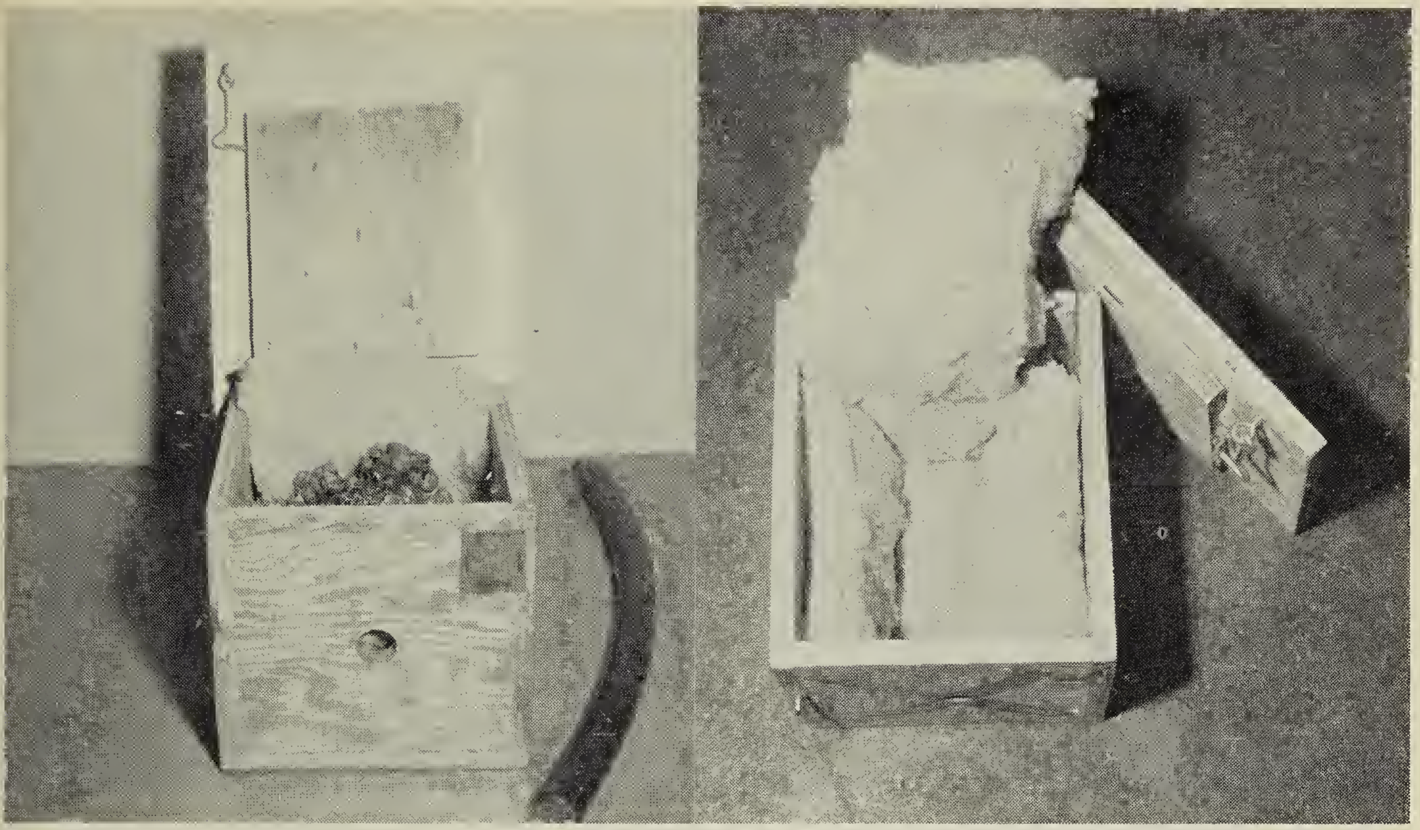

Figure 1: A bumblebee nest box showing placement of entrance and ventilation holes (left), upholsterer's cotton (right).

avoided. Some of our best sites have been the east sides of north-south oriented carragana hedges. Placing the boxes under the overhanging branches protected them from wind, rain and shaded them from the hot afternoon sun. The carragana flowers also provided an important source of nectar and pollen in the spring.

A wider variety of underground nesting bee species may be induced into partly buried nest boxes. Some authors have reported colony establishment rates as high as 72 percent in some underground sites.[5] [6] The depth of placement can vary, but we have had reasonable success with nest boxes placed at a shallow depth and at an angle. A piece of plastic tubing 5 cm (2 inches) long was fitted into each entrance hole and the nest boxes were buried to half their depth with the exposed pieces of tubing at a 45° angle upward. The faces of the boxes around the entrances were covered with sod to the depth of the exposed tubes. Depending on location, establishment rates of up to 69 percent have been achieved with this type of underground nest box.

Underground nests are not without their problems, however. Wet or frozen ground conditions in the spring prevent the placement of nest boxes. Flooding after a heavy rain can be a problem, forcing queens out of the nest. Some queens can be forced out of a nest site as many as three or four times. Ants become more of a problem in underground situations; commercial ant baits placed near the nest help but do not entirely solve the problem. The placement and servicing of underground nest boxes is also more difficult.

Colony establishment

Several of the prairie and woodland species of bumblebees readily colonize the artificial nest boxes. Of the prairie species, *Bombus rufocinctus* is the most common

A bumblebee feeding at a Gaillardia *Fred W. Lahrman*

species encountered in nest boxes. Fewer numbers of *B. borealis* and *B. nevadensis* will be found. In southern Alberta, Hobbs et al[6] also recorded some success with *B. fervidus* and *B. huntii.* In northeastern Saskatchewan, two woodland species, *B. perplexus* and *B. vagans* readily accepted the artificial domiciles. Establishments in prairie areas are usually lower than in wooded areas because of lower population densities. Several common ground nesting species do not readily accept artificial nesting sites; including *B. ternarius* and *B. terricola.*

When a queen occupies a nest box, she completely rearranges the cotton to form a homogeneous mass with a hollow chamber in the center. Then, the brood and honey pot are constructed. We have generally considered a colony to be "established" if the wax cells containing the eggs have been built and the honey pot is present.

Colonies at this stage of nest building may be easily examined to identify the species present. Gently lift the lid from the nest box and separate a bit of the cotton to expose the brood chamber. If present, the queen will usually assume a defensive posture on her back, with her abdomen and stinger thrust forward. She may be manipulated gently using a pencil or slender stick in order to identify the species. If this

TABLE 2: Common native and domesticated plants suitable for bumblebee forage.

Native species: willow spp. (pollen), dandelion, wild rose, sow thistle, gooseberry, wild currants, honeysuckle, blue bell, wild sweet pea, wild vetch, dogwood, bunch berry, wild strawberry, wild raspberry, fireweed, aster spp., goldenrod, Indian paint brush, bearberry, cranberry, blueberry. *Forage crops:* alfalfa, sweetclover, red clover, white dutch clover, alsike clover. *Other crops:* rapeseed, mustard, sunflower, buckwheat. *Garden:* rose, raspberry, strawberry, lilac, cotoneaster, crabapple, cherry, carragana, delphinium, nasturtium, iris, aster, cinquefoil (pollen), hollyhock.

examination is done too early or in a rough manner the queen may abandon the nest and not return.

Foraging by bumblebees

Bumblebees are dependent on flowers for all their food. The sugars in the nectar provide them with the carbohydrates necessary for both adults and brood. Pollen supplies the proteins vital for brood rearing.

Experiments by Kugler[8] have shown that bumblebees perceive colours of the spectrum but at shorter wave lengths than people. They can distinguish between blue, green and yellow; and can also detect different shades of these colours. Bumblebees cannot see red, which has a longer wave length. Many blue and yellow flowers (e.g. aster, goldenrod) are visited by bumblebees. Flowers exhibiting a colour contrast such as the variegated purples, yellows and greens of some alfalfa varieties are also attractive to bumblebees.

Bumblebees forage in much more unfavourable weather and earlier and later in the day than honeybees do. *Bombus ternarius*, for example, forages quite readily at 10°C. In the summer months they forage from dawn to dusk, and often spend the nights in the particular field where they are working. They are likely to remain constant to any crop which provides them with plenty of pollen and nectar.[4]

An adequate and nearby supply of flowering plants with blooming periods covering the entire growing season is essential when establishing bumblebee colonies. Bumblebees are strong fliers and will readily desert an area if good nectar and pollen sources are not near at hand.

Do not attempt to keep bumblebees in heavily urbanized areas unless there are flowering trees or shrubs, and a variety of annual or perennial flowers, or some grass with clover nearby. Gardens around the farmyard or suburban home can be excellent sources of forage, if good-sized patches of flowers are planted. A list of native or domesticated flowers especially popular with bumblebees is listed below (Table 2). This list refers particularly to northeastern Saskatchewan, but will prove valid for most other areas on the prairies. Meticulous observation of bees foraging in the field will usually determine the best plants to have available.

Hibernation

The length of the hibernation period (diapause) varies greatly between different species and also between queens of the same species. In order to ensure the well-being of the overwintering queens, areas of undisturbed ground are necessary. Most queens will probably make use of abandoned mouse nests in grassy and wooded places. Unfortunately, many can be lost by using stubble fields which are then cultivated in late fall or early spring. Many queens will hibernate close to their maternal colony and some will establish nests at the same site the next year. Results of experiments in Melfort showed that young queens, marked the previous fall, often established the next spring in their maternal nesting site.

The queens of *B. ternarius* and *B. terricola* are vigorous (on emergence) and will fly and feed immediately. Some queens such as *B. nevadensis*, appear later and seem weak and sluggish on emergence. They may take several days to recover sufficiently for flight and foraging activities.

Most people will be content with the establishment and observation of bumblebee colonies during summer. Artificial wintering procedures have been attempted by several authors.[10] [9] The work involved was quite time consuming and success was limited. Spring care of overwintered queens, in particular, entailed a great deal of work.

Pests and parasites

Bumblebees have many natural enemies, ranging from badgers or skunks to minute protozoans and nematodes. Mice and ants commonly destroy nests and tiny parasitic mites are often in the nests. In Saskatchewan, however, the parasitic bumblebee (*Psithyrus*) is the worse menace.

The four species of *Psithyrus* found here resemble other bumblebees in color but have no pollen baskets on their hind tibiae. They produce no worker bees, only males and queens; the mated queens emerge from hibernation a few weeks later than other bee species. The *Psithyrus* queen finds a bumblebee colony by its scent, and enters the nest quietly so that the workers are not alarmed. She may drive out or kill the resident queen immediately or after several weeks of cohabitation.[6] The workers accept the *Psithyrus* as their new queen; she lays her eggs, and the workers feed and tend the larvae as if they were their own. *Psithyrus* females make no contribution to the maintenance of the nest; colonies thus infested tend to be small, weak, and of little practical value for pollination.

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BREEDING BIRDS IN SASKATCHEWAN WITHOUT DOCUMENTED NESTS

C. STUART HOUSTON, MARY I. HOUSTON, 863 University Drive, Saskatoon, Saskatchewan, S7N 0J8, and J. B. GOLLOP, Canadian Wildlife Service, 115 Perimeter Road, Saskatoon, Saskatchewan, S7N 0X4.

Since the preliminary list of Saskatchewan birds by Mitchell in 1924,[31] the *Blue Jay* has for nearly 40 years been a major forum for publication of additional sight and breeding records. For 20 years the Saskatchewan Natural History Society has also printed solidly researched special publications, with a long-range plan to cover the extreme corners of the province, the major centers of human population, and selected areas of special ecologic or historic interest.

Much more important than the interesting study of stray accidentals is the study of breeding birds, fundamental to any future provincial list. A recent survey of the literature has revealed that there are published breeding records for Saskatchewan for 242 species. This number includes the extinct Passenger Pigeon, for which documentation is less than perfect.

In this review, a complete absence of documentation for 14 regular summer residents, and incomplete or unsatisfactory documentation for 19 others, was evident. We therefore compiled a list of unverified (designated UNV), of incompletely documented (INC), and of one fully documented but unpublished (UNPUBL) species.

For full documentation there should be a record by a reliable observer of a nest, with eggs or young, with a date and locality. Flightless or newly fledged young are satisfactory evidence of breeding, but the lack of any record of a nest places the species in our INC category. Space does not allow us to list all the sight records and specimen records nor the observations of singing males that appeared to be on territory. Instead, the reader may assume that we agree in general with the mapping of the summer range by Godfrey in his 1966 edition of *Birds of Canada*[18] and with the mapping of Gollop in his 1969 contribution to the *Atlas of Saskatchewan*,[20] unless notation is made to the contrary.

In truth, the ornithologist's traditional use of the term "breeding" instead of 'nesting' is a little ambiguous, as two of us learned from an encounter southwest of Swift Current. We had been told that Ring-billed Gulls were nesting at the Duncairn Dam reservoir. When we arrived, two local farmers drove up in their half-ton truck to begin fishing. After a quick look showed no gulls in sight and no nesting islands in the upper end of the reservoir, we asked the farmers whether they had noticed any breeding gulls. We got an enthusiastic and affirmative response. "Oh, yes, last week there were hundreds of them, around the bend, less than a mile away." We trudged down the shore and got a view of most of the reservoir, but not a gull was in sight. When we returned disappointed to the car, the same farmers were packing up their gear and putting their fish away. "We didn't find any gulls nesting, nor any place where the gulls could nest," we said. "Oh, was the reply, "You didn't ask about nesting. You asked about breeding. Last week there were hundreds of gulls, breeding all over the place. They were jumping on each other's backs, and going to it in great style. But we didn't see any nests."

Great Egret INC. There are two Saskatchewan breeding records. A pair nested in a Great Blue heronry east of Craven in 1955 and an unnamed farmer told Elmer L. Fox that he had watched from the distant hillside while the adults fed the three young in the nest.[16] Roney found egrets on a nest 10 m up in a tree in a heronry on Middle Quill Lake on 30 June 1976, found broken eggshells below the tree and heard young calling in the nest. He did not climb the tree.[40] Observations of eggs or definitely identified egret young, with exact dates, are not yet available.

Cinnamon Teal UNV. Shown as a query on Godfrey's map.[18] Males are seen across the southern third of the province every year, most commonly in the western half. The females cannot be separated in the field from the female Blue-winged Teal and it is, therefore, not surprising that we know of no records of nests or flightless young.

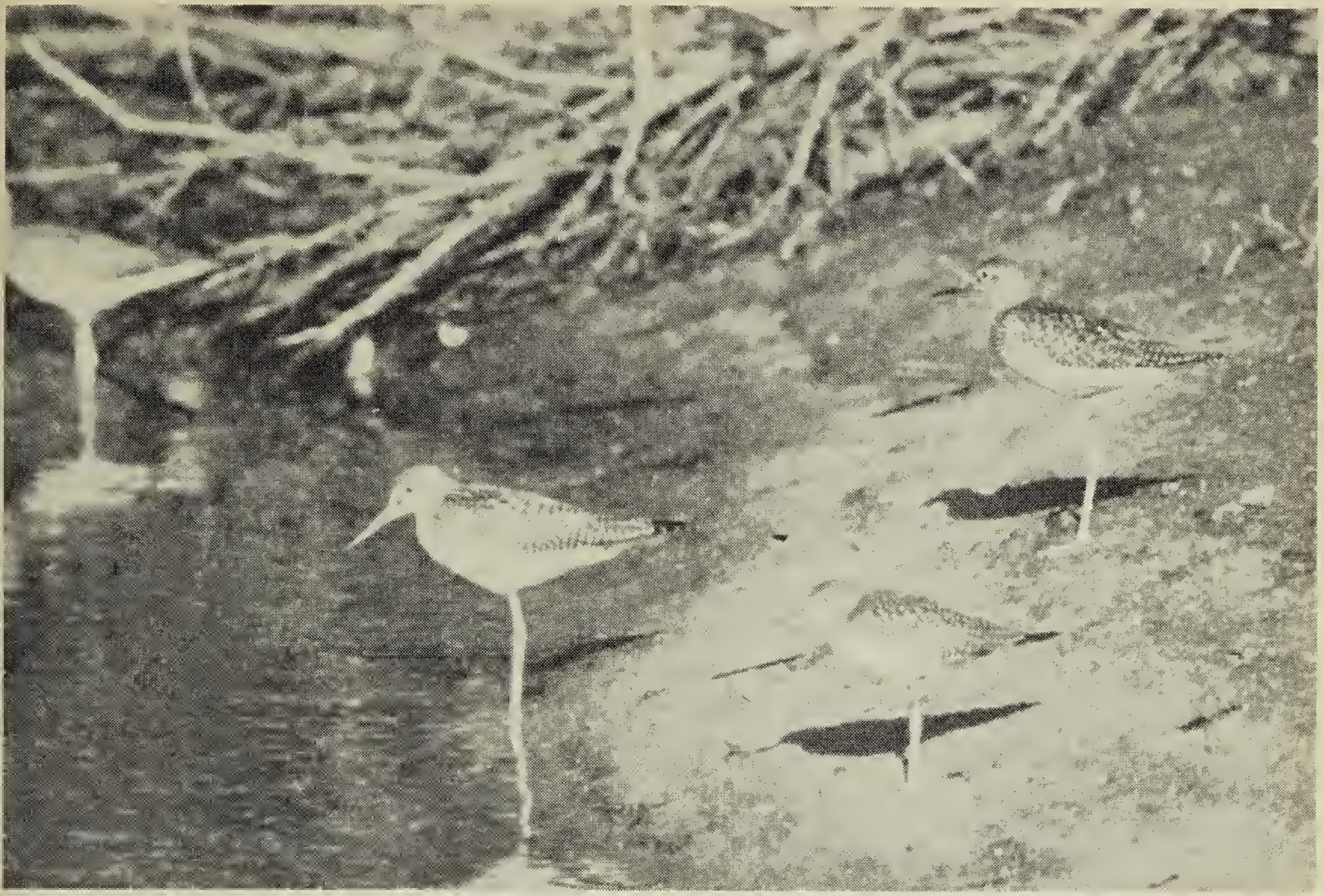
Greater Scaup UNV. Bent in 1923 gave the range as "probably still in . . . central Saskatchewan (Prince Albert), central Alberta (Buffalo Lake) . . ."[6] The fifth AOU Check-List in 1957 gave the range as "south to . . . North Dakota (rarely Lower Souris Wildlife Refuge, probably Devil's Lake)",[1] yet Stewart in 1975 did not list it as a breeding species in North Dakota[44] and Salt and Salt in 1976 listed it only as a "rare transient" in Alberta.[41] Godfrey's map shows its range barely touching the northeastern corner of Saskatchewan.[18] One possible indication of breeding is for Campbell Island on Island Falls reservoir, where Stelfox noted a male on 20 June 1973, which behaved as if on territory.[3]

Surf Scoter INC. Francis Harper collected four downy half-grown young near the north shore of Lake Athabasca, southeast of the present site of Uranium City, on 28 and 31 July 1920. These were the first downy Surf Scoters known to science.[33] Nero found three broods on Little Gull Lake in 1962 with seven, eight and four young on 2, 6 and 9 July, respectively. The first two broods were newly-hatched and the third set were about one day old.[33] In 1963, Nero revisited Little Gull Lake and found a brood of six nearly full-grown young on 2 August and a half-grown brood of four on 3 August.[34] No nest has yet been reported from the province.

Hooded Merganser INC. There are only three published breeding records for Saskatchewan. John F. Ferry found two broods of four or five at the south end of Big Quill Lake on 10 July 1909.[15] J. B. Gollop saw a brood of seven almost full-grown young without parents on Brightwater Reservoir, west of Hanley, on 27 July 1968.[21] John Polson saw a female with a brood at the west end of Tobin Lake on 10 August 1976.[2]

The Prairie Nest Records Scheme contains a report of a nest with six eggs found on 12 June 1966, in a chimney nearly six miles west of Swan Plain. It was listed as a Wood Duck, then as a Hooded Merganser but more probably was a Common Goldeneye.

Erskine remarks that it "scarcely



Greater and Lesser Yellowlegs *Gary Anweiler*

extends into the boreal region."[14] Godfrey's map shows only queries for its Saskatchewan range,[18] but hollow tree cavities should be checked along larger waters on the open prairie, in the parkland, and along the southern fringe of the mixed forest.

Peregrine Falcon UNV. While there is little doubt that this species nested along river valley cliffs, particularly rocky cliffs along northern rivers, there are no published records to our knowledge. There are rumors of former sites along river cliffs north of Lake Athabasca, without confirmation. Godfrey has no map for this species.

Turkey INC. A wild Turkey with at least four young in Cypress Hills Park, sighted by Wayne C. Harris on 22 July 1979, appears to represent the first breeding record for this introduced species.[22] No nest with eggs has yet been reported in the wild.

Greater Yellowlegs INC. There are two fully confirmed breeding records of flightless young. Nero found a chick one or two weeks old at Little Gull Lake on 11 July 1962.[33] Anweiler (mss.) caught a fully feathered but still flightless chick at Hanson Lake on 6 July 1972. No nest has been reported.

Least Sandpiper INC. Shown as a query on Godfrey's map. Two pairs were found on territory giving distraction displays at Hasbala Lake on 16-17 July 1963 and Anweiler found a newly hatched chick on a hummock in a bog at Milton Lake on 9 July 1964.[35] No nest has been reported.

Short-billed Dowitcher UNV. The closest evidence for breeding is for Montreal Lake where Farley M. Mowat in 1946 reported a "breeding colony that seem to belong to the recently invalidated 'hendersoni' race."[32] When he visited CSH in August, 1946, Mowat told about collecting the adults for the Royal Ontario Museum collection. His field notes reported: "June 21, 3 on area of grass muskeg at south end of muskeg slough. 2 birds very agitated and flew around my head. Didn't locate a nest. One collected with bill 55 mm June 25, 5 or 6 birds at Muskeg L., 3 collected all with bills below 57 mm. All 4 skins from Montreal L."

Randall in 1942 found five dowitchers, probably of this species, at Niska Lake near Kazan Lake, but found no evidence of nesting.[38] Erskine said at Dore Lake "One bird appeared and objected to my presence on June 22 and 24, 1973 . . . perched and called repeatedly."[13] No nest or flightless young have been reported.

Northern Phalarope INC. Nero found a female with four downy chicks at Little Gull Lake on 2 July 1962.[33] No other Saskatchewan nesting reports are known and no nest has been found.

Screech Owl UNV. Godfrey's map shows the Screech Owl as occurring in southern Saskatchewan as far east as Regina, with a query for the Cypress HIlls.[18] Flightless young have been found near Lyleton, Manitoba, within 15 km of the Saskatchewan boundary.[27] Belcher has been told of "an August 1979 record for Moose Jaw of a young Screech Owl extricated from a chimney" but a date and details of its powers of flight are lacking.[5] Three Screech Owls in the Prairie Nest Record Scheme are reported as nesting in old Crow and Magpie nests; these were undoubtedly Long-eared Owls. Almost all sight records are for fall, winter and spring with almost none in the presumed nesting season, yet it should be looked for in hollow trees in river valleys, particularly the Qu'Appelle, Souris and Assiniboine and their tributaries.

Poor-will UNV. Godfrey's map shows a small spot for the localized range in the Cypress Hills.[18] Elliott has described his 1965 observations along the Frenchman River, in the west block of the Cypress Hills, and in the Great Sand Hills east of Fox Valley,[12] but no evidence of breeding has been reported.

Red-headed Woodpecker UNV. The status of this species through 1966 was reviewed by Rosalind Taylor, listing some 69 observations, as far north as Prince Albert and Torch River, including three presumed breeding records.[45] Walter Raine's record of a nest with seven eggs at Moose Jaw on 15 June 1891 is suspect.[28] [37] Macoun's records of "breeding" at the east end of the Cypress Hills in June 1894 and at "Stone Pile" on the Frenchman River in June 1895[29] are remarkably vague and do not tell us whether a nesting cavity was found, nor whether eggs or young were seen. Modern and more complete documentation would be welcome.

Willow Flycatcher UNPUBL. The former Traill's Flycatcher has been split by Stein into two valid species difficult to separate except by song. One of these is the Alder Flycatcher of the moist shrubby areas along the southern edge of the mixed forest in central Saskatchewan, for which we have adequate nest records. The other is the Willow Flycatcher which nests along the river valleys that project into extreme southern and eastern Saskatchewan.

There are no published records for the Willow Flycatcher, but the Prairie Nest Records Scheme has a record for a nest with four eggs found by Wayne C. Harris on 23 July 1971, in the crotch of a rose bush along a small creek near Ardath. Although farther north than anticipated, it gave a "fitz-bew" call.

Dusky Flycatcher UNV. Godfrey's map shows a spot representing the local distribution in the Cypress Hills, where they have been noted since H. H. Mitchell first discovered them there in 1921.[30] J. A. Wedgwood reported a pair "in a state of agitation" during the SNHS spring meet in the Cypress Hills, 11-13 June 1976.[47] No nests or flightless young have been reported in Saskatchewan. Four nest cards in the Prairie Nest Records Scheme from Conquest in 1960 and 1961 are far from this species' range, by an inexperienced observer, and obviously in error.

Eastern Wood Pewee UNV. The first Saskatchewan specimen of this species was collected by Ernest Thompson (Seton) in the southern edge of the Duck Mountains north of the present site of Runnymede on 14 June 1884. He found it to be "very common" in the "thick woods" or "higher, heavier timber", whereas the Western Wood Pewee commonly frequented the "open woods and willow thickets" only a few miles to the south, at his homestead.[46] Callin reports that they are regular in the Qu'Appelle Valley as far west as Round Lake, whereas the Western Wood Pewee is present in the valley from Echo Lake west.[10] Godfrey does not show its range extending into Saskatchewan. No nests or flightless young have yet been reported.

Violet-green Swallow INC. Violet-green Swallows can be found locally visiting holes in mud cliff faces along the southern border of the province. The first active nest, ready for eggs, was photographed on 14 June 1969, at Prairie Dog Butte east of Val Marie.[25] They were found flying to nest holes at Eastend on 19 June 1977, by Margaret Belcher[43] and at Ravenscrag in July, 1977, by Wayne C. Harris,[43] and as far east as the Goose Creek valley south of Constance on 12 July 1975,[8] but in none of these instances was the contents of a nest examined.

White-breasted Nuthatch INC. The first Saskatchewan nest was found in Moose Mountain Provincial Park, four miles west of Kenosee Lake on 13 June 1959, by Ralph D. Carson.[36] It was carrying food to a nest cavity. Callin has reported another three instances of adults carrying food to nests, all in the Qu'Appelle area.[10] No nests have had their contents inspected. Godfrey's map shows a query placed in eastern Saskatchewan.

Winter Wren UNV. This species is a resident of the mixed forest, particularly of stands of balsam fir across the mixed forest as shown on Godfrey's map. Mitchell collected the first Saskatchewan specimen at Big River on 10 June 1922,[30] but we have no documented evidence of nesting. However, Hooper and Hooper reported an intriguing winter find: "A rounded nest of moss found on a spruce branch south of Dillabough, Jan./54, nest about four inches in diameter, contained a wren wing primary which W. Earl Godfrey reports as apparently that of a Winter Wren."[23] This might have been a dummy nest, since Bent reports the most common site for the active nest to be in cavities of roots of upturned trees or in low cavities in standing trees.[7]

Mockingbird INC. The only reported Saskatchewan nest record was from Dundurn where Dale Guthormsen had a male singing from 1 June 1977, with two young fledged on 21 July.[43] Godfrey's map does not include Saskatchewan within its range.

Townsend's Solitaire INC. The first Saskatchewan breeding record was of a pair feeding three recently-fledged young on 20 July 1979, in Cypress Hills Provincial Park. They were sighted by Wayne C. Harris, who had found the pair on territory from 18 to 21 June, though he could not find the nest.[22] A nest has yet to be found. Godfrey's map does not include Saskatchewan within its range.

Golden-crowned Kinglet INC. Bob Godwin and John Polson observed a pair feeding recently fledged young in the Fort-à-la-Corne Forest Reserve during July, 1976.[2] This is the only definite breeding record for the province although Erskine found them regular in black spruce south of the Doré Lake airstrip in 1973 (pers. comm.). No nest has been found. Godfrey's map shows only two queries within northern Saskatchewan.[18]

Bohemian Waxwing INC. Randall observed a family of four young with flecks of down at Kazan Lake on 28 June 1942.[38] Shortt found three juveniles thought to have come from nests in the vicinity of Lake Athabasca on 17-19 July 1945.[24] No nest has been found.

Townsend's Warbler INC. The first breeding record of this species away from the mountains was documented by Wayne C. Harris at Fort Walsh on 18 July 1979 when he saw two adults feeding two recently-fledged young.[22] No nest has been found. Godfrey's map of course does not include Saskatchewan within its range.

Nashville Warbler UNV. Although Godfrey's map shows only a small breeding area at Prince Albert National Park,[18] this species is distributed in summer in the southern portion of the mixed forest across the eastern half of the province.

Dr. John Richardson collected a specimen at Cumberland House in 1827,[39] Ernest Thompson (Seton) noted it "in full song and evidently breeding" in the Duck Mountains near the present site of Runnymede on 11 June 1884,[46] and Fred G. Bard collected the first specimen for the Saskatchewan Museum in 1939 in the Pasquia Hills.[11] We know of no records for nests or flightless young.

Cape May Warbler UNV. This species is sparingly distributed in the boreal forest from Prince Albert National Park and Kazan Lake north to Lake Athabasca, as mapped by Godfrey.[18] No nest has yet been reported from Saskatchewan, but it should be looked for near the top of a tall spruce.

Black-throated Green Warbler UNV. Erskine lists this as one of the three most typical species of balsam fir forest, scarce in young conifer stands, and rare in pure spruce.[14] Randall found it chiefly in young jack-pine at Kazan Lake in 1942.[38] Anweiler (mss) found it locally common in mature mixed woods at Big Sandy Lake. Although widely distributed across the mixed forest, no breeding evidence has yet been reported.

Bay-breasted Warbler INC. Erskine has described this as one of the three most typical species of balsam fir forest, particularly in the most mature stands. It is rare in pure spruce, except during spruce budworm outbreaks. It is one of five species of Saskatchewan warbler that is restricted to boreal coniferous forest.[14] Although widely distributed, there is only one breeding record, juvenals out of the nest being fed by adults at Flotten Lake on 26 July and 8 August 1948 by Godfrey.[17] No nest has yet been found.

Orchard Oriole INC. Saskatchewan's first breeding record was obtained at Fort San by Callin in 1974. The male began singing on 19 June and the young left the nest, on a spruce branch six feet from the trunk, on 17 July, as judged from the ground. The tree was not climbed.[9] Godfrey's map does not include

White-winged Crossbill *Lorne Scott*

Saskatchewan within its range.

Scarlet Tanager UNV. At least 17 Saskatchewan records of this species were reviewed by Belcher in 1965,[4] and there have been sightings every few years since. The closest to a breeding record is the report of a pair watched from 7 June to 5 July 1976. They were on steep grassy slopes between two deep coulees along the bank of the Saskatchewan River near Nipawin and were seen carrying food by Bob Godwin.[2 42] Godfrey's map does not include Saskatchewan within its range.

Evening Grosbeak INC. The only Saskatchewan breeding record is Street's observation of a young bird at Nipawin barely able to fly on 23 July 1957.[26] Anweiler (mss) observed a pair copulating at Jan Lake in June, 1963. No nests have been found.

Red Crossbill INC. In 1948 Godfrey had singing males present throughout June and the first half of July and collected juvenals which almost certainly were raised locally at Flotten Lake.[17] T. M. Shortt collected adults and striped juveniles able to fly at Fond du lac on 15 and 16 July 1945.[24] In Saskatoon, Marie Gillespie had resident parents (one banded) bring a young bird, just able to fly, to her feeding tray on 31 May 1964 at 221 - 11th St. East.[19] T. J. Glassford at 203 - 9th St. also had crossbills bring newly fledged young, barely able to fly, to his feeder, one year in the mid-1960's (pers. comm.). No nest has yet been found. There were at least two broods (adults feeding recently fledged young) in Moose Jaw in 1973 (Edith Kern, pers. comm.).

White-winged Crossbill INC. At Flotten Lake on 23 August 1948, Godfrey observed a juvenal recently out of the nest and still being fed by its parents.[17] Derek Beacham's unpublished field notes at Prince Albert report observations of a female carrying cones towards a presumed nest, and a juvenile crouched with fluttering wings while accepting food on 10 April 1968.

Godfrey's maps show a few other species whose ranges almost touch the northeast corner of Saskatchewan: Willow Ptarmigan, Parasitic Jaeger, Northern Shrike, Lapland and Smith's Longspurs. In the east one might also watch for Yellow-throated Vireo and in the south for Cattle Egret, Glossy Ibis and Field Sparrow.

NOTE: Godfrey has no maps for Trumpeter Swan, Mute Swan, Cattle and Snowy Egret, Golden Eagle, Prairie Falcon, Turkey, Whooping and Sandhill Crane, Rock Dove, Passenger Pigeon, Willow Flycatcher and House Sparrow.

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EARLY MANITOBA BIRD NOTES

HAMILTON M. LAING, 1431 Comox Avenue, Comox, British Columbia V9N 3Z5.

I was interested in birds very early in life and my interest never weakened. Here is my memory of the first birds that stuck. It was at Clearsprings, Manitoba, and they were a mystery for years. I was about three years old at the time and was walking hand in hand with my mother across what we always called the "Big Bridge" that spanned the coulee that separated the premises of the two Laing farms, Thomas and William — the latter my father. (They had taken up their land here side by side in the early 1870's.) From the bridge I spied seven or eight bright birds in a muddy pool left by the scrapers when the new road had been graded.

These pretty birds in the mud-puddle excited me. I noticed that about half of them were larger and more brightly colored than the others but my mother explained that that was the way of birds for the pappas to be big and brightly colored and the mammas to be smaller and tamer colored. But there was something wrong with the picture; pretty birds shouldn't be wading in dirty water even if they had black bills and feet. I wanted to watch these birds that were like no home birds, but my mother dragged me away.

It was 18 years later that, as a budding young ornithologist, I solved the problem of the pretty waders of the dirty water at the bridge. I was teaching my second rural school, the new Caronton school at Boissevain in 1905, not far from Whitewater Lake. On a spring day, wading the grassy shallows of the big lake (Whitewater), I stumbled on a little company of the beautiful waders that I had never forgotten. I must have broken records driving that bike home to reach my ornithological scripture: "Chapman's Color Key to North American Birds." I had my gun with me of course; all ornithologists of those days carried guns as well as field glasses and I had shot one of the largest and brightest birds. Wilson's Phalaropes, of course, and I made a drawing of the bird for my collection of field sketches and learned by dissection that my fine bird was a female well on the way to nesting! Later I found the species nesting in a pasture near my school. But I never trusted the ornithological judgment of my mother again!

Later in the season in my home-made boat near the middle of the big lake I encountered a flock of what I thought were sandpipers till I noted them swimming about nimbly and doing a lot of whirling as they seemed to be kicking some sort of food from the surface. The gun and my new text again solved their identity as Northern Phalaropes. I saw them many times later and always recognized them on the wing by their clicking notes. I never saw Northern Phalaropes in eastern Manitoba.

Wilson's Snipe. Never a common bird to me in eastern Manitoba at Clearsprings. So, rather strangely one morning about 1890 enroute to school, (which was one straight road mile from home) I heard a strange winnowing plaint repeated from the sky above the woods where the public road cut through the woods on the Jamieson property. I had a delightful bird puzzle to solve. How I did solve it I don't now recall but before long I knew it was a Wilson's Snipe giving his courting song and there must be a nest somewhere near. As nest finding now was my chief sport, I went through the wire fence and searched the little tamarac swamp examining the grassy hummocks. On my second try found a ground nest with four brownish eggs in it. In neither search did I see sight of any nest-owner. At my approach she must have sneaked off her nest and hidden. (I did not follow up the history of this nest.) I thought the eggs were large for so small a bird, but when I considered the large eggs of the Killdeer that I knew so well, I decided that large eggs were standard with Limicoline birds and let it go at that.

In my youth I never met any Manitoban sportsman who considered the Wilson's Snipe a good game bird worth the expenditure of ammo — not while there were three kinds of grouse, a lot of ducks and geese and two kinds of rabbits — the big prairie hare becoming plentiful and the snowshoe rabbit always available. I had to wait 50-odd years and become a dyed-in-the-wool west-coaster to meet the snipe as a Canadian game bird. Two of my gunning Vancouver Island friends had discovered a snipe rendezvous and invited me in on a shoot. Because of his dodging flight I found him the most difficult of Canadian game birds to stop on the wing but when his plump little body came sizzling out of the oven he was tops. Later, during my work with the National Museum, I skinned a lot of the Wilson's Snipe's cousins and gave most of them the oven test.

Solitary Sandpiper. I met this sandpiper early in my life. He was in the east and west wherever there was a pool of stationary water. He was well named. I knew his voice from my bird-watching. He always protested loudly when disturbed. But I never saw a flock of his kind and I never saw his nest.

Greater Yellowlegs. I knew this big wader best in Manitoba from his behaviour when I saw him at prairie snow-water pools from the break-up of winter about April 1st. He was big and showy, loud of voice and he had a wonderful song, "Butler! Butler! Butler!" that travelled a mile. I saw him only in open country and, because of his long legs, he seemed a bigger bird than he really was. He was on the prairie long before my time and I looked on him as a big part of the spring but of small account in the migrant story of autumn. I never saw a real flock of his kind. Even at my best sandpiper beaches at Oak and Whitewater Lakes I never found him much of a figure in fall migration.

It was different with his small cousin, the **Lesser Yellowlegs** that was nearly always of importance in any wader gathering either spring or fall.

Killdeer. One of the original settlers of Clearsprings and common in southern Manitoba everywhere. At our place he arrived as soon as my father fenced the 30-acre holding field for the stock at night. Perhaps he liked the sound of the cowbell but more likely he was attracted to the area because the grass was always cropped short and there was always water available at one of the three blind springs where my father made the best one into a drinking place for the stock.

The killdeer hated grass and never used a blade of it or a twig at nest building. Instead, the female used a slight depression instinctively matching the ground with the color of Killdeer eggs and doing it so well that at 20 feet the "nest" was invisible to

Greater Prairie Chicken (Pinnated Grouse) *Fred W. Lahrman*

all but the sharpest eye. She had skill as well as talent, for her splendid wings could outfly any hawk of her neighborhood. She was also a talented actor and near her eggs would play the wounded bird act to perfection.

Pinnated Grouse. Like so many birds that followed settlement into the Canadian northwest, this one came early. My father had a story indicating its arrival to the Red River fields in Canada was in the early 1870's. Later when I had arrived and reached schooling age at 11 years, I found a good number of these new grouse in Clearsprings. But I also found that it was harder to put the new "Minnesota prairie chicken" into a game bag than it had been to bag the old-time Sharptail.

It was at Oak Lake and Whitewater Lake that I really met the new grouse in numbers. They loved the open meadows at both lakes and in spring kept the air lively with their breeding music. They really sang and whooped. At first they were mainly migratory and few remained to face the Manitoba winter. And they were always afraid of open water and at both lakes ganged up in good numbers in late autumn before going around the east or west ends. I have a negative that shows about 100 birds in a flock on the wing. The migratory movement was less observable in the spring when they came north in driblets in singles or two's and three's but flying high and direct like migrant ducks and geese. In spring at strutting time in the meadows they were very noisy and their humming songs and individual "Whoops" could be heard a mile. Their courtship antics were vastly different from those of the Sharp-tailed old-timers whose dances amused the first western explorers.

Passenger Pigeon. I am happy to be able to say that, though I was raised in Manitoba, I once saw Passenger Pigeons alive there. I cannot fix the date positively but it was before I was a diarist. I was walking with my father on the prairie road west of the woods on a spring day near where later Clearsprings school was located, when he suddenly exclaimed "Ho! Pigeons!" and approaching us from the south were a dozen or 15 large birds at perhaps 500 feet elevation. This flock was headed due north purposefully. My first surprise was that these birds were evenly spaced in flock formation like migrant geese or ducks and from what I had seen of domestic pigeons I thought that wild ones too would fly in a scatter. But I had not the shadow of a doubt about my father's judgment in the matter. In his nine years at Hemall, Ontario, he had been within seven miles of a big pigeon hatchery on the shore of Lake Huron and knew these birds well.

Mourning Dove. I was walking with my father also when I met my first Mourning Dove. The exact location of this meeting is now obscure. There is a section of rail fence involved and my parents had none such. We were close to this fence when there came a loud clatter of wings as five or six large birds burst up from the ground and two of them perched on the fence. "Turtle doves!" exclaimed my parent, probably using the nomenclature of Ontario, otherwise of Scotland for a small dove. It was the dove's first appearance though my father had now been in Clearsprings about 12 years. Both pigeon and dove records must be dated at about the same year. In neither case did I have a hankering for a gun. I was born in 1883 and at 11 years used both gun and rifle, so both these species (pigeon and dove) must be dated approximately 1890.

Once established, the Mourning Dove spread very rapidly. He seemed to like the sandhills. I found two nests there and another on top of a post. In 1911 when I forsook my boarding house and tented in a tiny poplar bluff on the edge of town, I had a pair of nesting doves close to my tent where the music of the male gave me a lot of pleasure. How these nests escaped the crows and Bronzed Grackles — eggers both — I never learned.

Turkey Vulture. In the 28 years that I lived in Manitoba the vulture was a very rare bird in both east and west. In the Red River Valley I saw the species only once. I don't believe that I confused the buzzard on the wing with any of the big, broad-winged hawks for the vulture has a cut of his own in the air and a flight of his own. I think it was 1893, the year that I had taken over my share of the stable chores, that I saw my first Turkey Vulture. We had lost a horse and instead of getting out the shovels to bury Dobbin decently, someone hatched the wacky idea that we could cremate the carcass with an unwanted wheat-straw pile in the stable-yard — kill two birds with the same stone.

So faithful old Dobbin's remains were dragged out on the prairie 300 yards from the buildings and a rackful of straw followed that made a terrific blaze. Result: we failed utterly; and after a week of summer weather there was an effluvium rising from that mound of blackened carrion that I'm sure was unmatched in the county. That the Laings were not asphyxiated was due entirely to the fact that a north-east wind was a rarity there. From the stable I kept daily watch to see what I hoped for: that the abundant crows of the neighborhood would develop a taste for underdone horse meat; but not even once did I see crows pay any attention to such fancy food while grasshoppers were in good supply. But one evening just before I left the stable when I took a last look out over our own grisly cremation, my eye was captivated by a big black bump atop the carcass and a second hard look said "Buz-

Turkey Vulture *Fred W. Lahrman*

zard! Vulture!" I knew from pictures that our visitor was none other, and my first. The visitor was not making a meal as I hoped, but sitting immobile as though enjoying the smell.

To my great disappointment my Turkey Vulture did not return and the question that filled my head was: how in a region that had no vultures did this bird locate the bait that drew him to Clearsprings? And there seemed only one answer: the vulture must have had a marvellously keen sense of smell that drew him an unconscionable distance. It wasn't a case of his riding herd on other birds that were using the carcass. He discovered it through his own talent.

Marsh Hawk. In early Manitoba days he was an original and I think the first predatory bird I learned about. He was a common early neighbor at Clearsprings but more common at Oak Lake where he roamed over a much wider range. He came early in spring among the first arrivals at the break-up of winter's snow and mainly left early in autumn when his main food, mice and other small mammals were denning up for the winter. In my youth I was more familiar with the Marsh Hawk than with any other hawk. Our grassy coulee system was his hunting ground for mice through much of the year. He hunted there while on the wing and dropped on them; his long slender legs and feet were competent grabbers.

Before I was of much use on a dairy farm I was an eager bird-nester and by watching to see where the male hawk packed his plunder. I discovered a nest not far from our stables. It was half hidden in the brush on a knoll just across the road 200 yards off. When I reported the nest to my father he said to keep away from it. But I had to have one good look at that nest — a slovenly matting of grass and some twigs. My father had seen his hawk neighbor packing home Franklin's Ground Squirrels which to Laings were mild pests. The varmint insisted on living with us and persisted in spite of the fact that my father usually answered his ringing whistle with a shot from his Remington rifle.

In 1894 when I was first allowed to use the rifle, I polished up my growing skill as executioner also. My mother detested the "dirty little beast" because one dug under the lowest log of the milk-house and sampled the cream in all the row of cooling pans — which was hitting my mother where it hurt. This, of course, was before we got the Artesian well to raise the cream on our milk cans. My father had a hearty respect for the Marsh Hawk because, though he nested almost in our midst, he never showed any interest in our poultry, which is more than can be said for several other species of Manitoba hawks.

It was at Oak Lake that I got my most intimate knowledge of the species. I learned first why he was a "marsh" hawk and why he was a "harrier". He loved the marshes and Oak Lake was surrounded by big deep marshes on three sides. These were a far-famed breeding ground for a lengthy list of marsh birds. And in the days that I camped at the lake in sight of these marshes there was scarcely a day of the breeding season that I did not see the Marsh Hawk harrying some weaker birds and being himself harried by a union of stronger birds, ganged up to drive him from the area.

The main lake drained through Plum Creek into two big marshes that were homes to two big colonies of Franklin's Gulls and a daily sight was a dozen of these little gulls, fighting mad trying to drive the intruder from their home area. What took him to the marsh in the first case? The answer seemed easy and it all boiled down to the sad fact that in the breeding season of marsh birds, *Circus* gave up the chase after tough little mammals to feed his young on the tender young of his marsh neighbors. Plainly no young bird hatched on his range could expect to reach flight unless his parents were strong enough to defend him or, in the case of small birds, cunning enough to keep him hidden. I found one Marsh Hawk's nest in some willows on the lake shore less than half a mile from the nearest Franklin Gull colony. There was method in this.

At Oak Lake I saw another side of *Circus* not observed elsewhere. The few marsh hawks that were about the marshes in late September and through October were linked up with the shooting fraternity and knew what they were doing. In my judgment it was now that this cassius of the predatory birds found the fattest living of his year — in northern marshes. The shot gun, even in the best of hands, is a wounding weapon. After every lodge shoot there was almost bound to be a wounded Canvasback too tough for either man or dog to retrieve; or a Mallard hard hit that made half a mile on the lake to drop dead and drift ashore. Cassius knew all about this. For him, who normally worked hard for a living, this wasteage of the gunners was apple pie with whipped cream on it for the dessert of a hard year. Around the lakeshore there were patches of feathers on the drifted Pondweed rolls where he had digested a grain-fed mallard. He was never the epicure and his wide range of food covered toads and frogs and garter snakes as well as small mammals. In hard times he was not above a touch of carrion and this gift of the gunners was far above the level of a dead hen on our manure-pile on which he had once dined.

Sharp-shinned Hawk. Another original, but never common at any of my stations in early years — commonest at times of migration when they travelled with their commissary, the small birds, and gave them a rough time. The species probably nested in some of the poplar bluffs at Clearsprings and some wooded stations westward but I never caught him at it. For long in my early years I did not know his book name and called him the "darter" because of his sudden flushes of speed after small birds. I have seen the Sharp-shinned Hawk take prey oftener than any other hawk. Three or four times I have rescued sparrows from his clutches that, when released, flew-off more scared than hurt. This is not the deadly grasp of the falcon, Pigeon Hawk or Sparrow Hawk. But very early I learned of his dexterity at killing small birds though I never saw him interested in a mouse or other small mammals.

Once while I was enjoying my swing hung in the balsam poplars half way between house and stable I caught the Sharp-shinned trying his luck for day-old chicks right beside me. The valiant old Plymouth Rock mother was putting up a splendid defense for her charges, protesting vocally and jumping up to meet his every strike and pecking wickedly at him till I came dashing to the rescue. It was the only time I saw a Sharp-shin interested in our poultry.

Early though in my bird studies I learned of the Sharp-shin's deadliness concerning the small birds that seemed entirely his sole source of food. Three or four times I saw the slow-winged Song Sparrow in his clutches and in another case shot the hawk while in possession of a dead Purple Finch. Once I saw him nab a junco on the wing. which he seemed to do very easily. Several times at the beaches at time of migration I saw him in hot pursuit of sandpipers, but I feel that his luck with sandpipers was rather low. When attacked the piper flock bunched closely and flew "at top speed". To attempt to grab a bird from such a blizzard of speeding missiles was really a dangerous game and I never saw a Sharp-shin fool enough to risk his wings trying it.

Once while I was at my Manitoba Oak Lake camp, I was out in the Henderson pasture at the big slough standing holding my binocs to identify two passing migrant finches. I had just decided on goldfinches when a big female Sharp-shin came from somewhere, swept into my focus and struck at them. They too foiled the attack by a vertical dodge. The hawk renewed the attack three or four times and each time was outmaneuvered. She could out-fly the goldfinches but not out-dodge them and after about four failures withdrew from the action and went on her way. Perhaps she had already dined. To me it looked like sour grapes.

Red-tailed Hawk. Another of the originals at Clearsprings but never noted nesting there, perhaps because his food, Richardson's Ground Squirrel of the western wheat fields was not found east of the Red River and the Franklin's Ground Squirrel, though common enough, being a "scrub gopher," was much harder to catch. At Boissevain I saw least of the Red-tail. Perhaps this was because of the scarcity of nesting timber and also because the wheat farmers poisoned their ground squirrels. It was at Glenora and Oak Lake that I got readily acquainted with this "gopher hawk", as he was often called. He was common, particularly at Oak Lake, where a lot of wasteland produced a healthy crop of three species of ground squirrel, despite the poisoning campaigns of the graingrowers, and nesting grounds were in abundance. He had the timbered valley of the Assiniboine River and two or three ranges of sandhills with scrubby poplars big enough for nest sites. Also the abundant oak timber of the lake shore was a favorite nesting place. In 1921 when I finished my season's field work for the National Museum at Oak Lake, I found two forms of the Red-tailed Hawk there: the normal brown bird nesting in river (Assiniboine) timber and the pale, whitish race (Krider's) nesting in the sandhills but also in the oaks at the lake, and I took specimens of both for my field catalogue.

In my experience these Red-tailed, broad-winged hawks were not the small mammal killers some naturalists would have us believe. I never climbed to an Oak Lake Red-tail's nest that did not show plenty of feathers of both ducks and grouse. In one low nest (Krider's) I examined in the nearby sandhills I found two freshly killed downy Sharp-tailed Grouse chicks and I thought it very likely that the two young Red-tail's in the nest already had breakfasted on other chicks from the same covey. I have a lot of notes on Red-tail food but, as they apply mainly to Vancouver Island conditions, I must pass them up here with the statement that the food list of the Red-tail is much more expansive even than that of the Marsh Hawk. I have heard the Red-tail charged with killing domestic poultry, likely when times were hard, but only once did I see him concerned with the Laing fowl. That day he came into the barnyard and perched on a post close to the cow stable. He seemed to be trying to size up what to do with so much good living when I fired my first shot from father's rifle at him — and missed and felt terrible.

Broad-winged Hawk. In only two places did I get acquainted with the little Broad-winged Hawk: Clearsprings and Oak Lake. He loved timber and plenty of water. At Clearsprings I saw little of him until the breeding season was over. Then I met him on my way to school at the fenced McCaskell woods and learned his sharp call that seemed to be dead in his throat through most of his time in the north. His was a short acquaintance, for he came late in the spring and left early in autumn. I associated his voice with early fall. As I never saw him molesting a small bird or being chased I decided he must be a frog-eater getting his nourishment from the coulee on the north side of the woods. There was a good frog population along the creeklet from the Big Spring and another good breeding pool for both toads and frogs below the Big Bridge on the road.

Only once did the Broad-wing show any interest in our poultry and that was on a day near fall migration about 1890 when a Broad-wing brought his family to our stable yard and set in to scare livers loose in the fowl that had been fed in the barnyard. The hawk visitors circled low, seemingly enjoying the confusion they produced. Perhaps a Broad-wing had a sense of humor and enjoyed the sight of two obese Plymouth Rock biddies trying to get home through the slide entry at the same time, or of well-grown cockerels high-tailing to the woods for cover and safety. The hawks kept up the game till my mother caught on, grew frantic and rushed to my father for support. This sort of circus with fowl didn't look good for egg production or Thanksgiving marketing of cockerels. Do something! Father was at his work bench. He put down his tools, strode into the kitchen and came out with the double-barrelled shotgun that some one had loaned him as he never had one of his own. There was a mean glint in his eye that the hawks couldn't see and when the first rouser came in range the gun boomed and sent the bird spinning down into the potato patch.

I was not a bit sorry. It was before I was allowed to shoot and it gave me my first chance to examine first-hand a young-of-the-year Broad-wing. Whatever their game meant, that shot put a sudden end to it.

Whatever knowledge I later acquired of the Broad-wing life history was acquired at Oak Lake in 1907 and later. Plainly he liked the oaks on the shore of the big lake. I think two pairs nested in the oaks though I never climbed to more than one nest. Again in early September his young were circling with him in the blue and his sharp note: "Stik-e-e-e!" was the plainest bird voice on Oak Island. Henderson who owned the island and did some farming on it, told me the "little hawks" did not bother his poultry; only the "big hawks" did, meaning, of course, the Goshawk and perhaps the odd Red-tail.

That is why one morning I stopped so suddenly on the road down the island when, about opposite the Henderson barn, I found myself within short range of a young Broad-winged standing beside the mangled remains of a young cockerel about 6 feet off the wheel-track and 10 feet from me. I said "Shoo!" and raised my hand. He raised his wings quickly and then slowly put them down again. He was loaded to his plimsoll, incapable of flight and he knew it. There may be a half dozen solutions to this unusual broad-wing behavior. Mine is that the cockerel got bumped off by a commuter's Model T, the hawk saw the accident and his opportunity, tried to pack off the victim but because it was beyond his own weight only jerked it away from the wheel track. Then quite naturally he overtaxed his capacity. Your guess may be as good as mine.

Goshawk. At the latitude of southern Manitoba the Goshawk was met rarely except in late autumn or winter. He was the only hawk that had an abiding interest in the rural poultry yard. He was just naturally a killer. Though all across Canada his chief food was birds of the grouse kind which he hunted relentlessly as well as the snowshoe rabbit (hare), he killed a lot of smaller birds also. And he had his own way of doing it. One collecting season in good Goshawk range in northern Alberta taught me the Goshawk's method of capture. He is a pouncer. No eye-spying from tall perches like the broad-winged raptors. No flying it down by sheer wing-power like the falcons do. Though superb on the wing, he pins his faith on the element of surprise, dodging the skirts of the poplar bluffs and cutting through them. Keeping at low elevation, he either pins an unsuspecting victim to the ground or hits him in the middle of a slow start. If rabbits are plentiful, he kills more of them than he does of winged prey.

But though most farmers with poultry had lost a bout or two to the "chicken hawks", if you had shown them an adult Goshawk in the blue plumage, they wouldn't have known what it was. It was the young first-year birds in the brown plumage that did most of the predation; and as there is considerable sex difference in the sizes — as in all hawks — it was the big efficient female that was the commonest predator.

I have only one good Goshawk predation story of the Laing poultry yard and it happened before my time. One day while my father was in the stable yard, a goshawk — that probably had made his stalk through the windbreak poplars close at hand — pounced on a lusty Plymouth Rock hen. I suspect the attacker was a small male and plainly it was a case of biting off more than he could chew. The squawking biddie dragged her aggressor through the fowl slide-hole in the door with her and my father was not slow about closing the slide and going in with a club.

Bald Eagle. In my prairie years a very rare bird. For my Clearsprings years I have only one memory note and it could never be forgotten. It was in the spring of about 1890 before it was my morning chore to take the Laing brothers' combined herds to pasture, while I was enroute to Clearsprings School. I was near the cross road when I saw a sight that moved me deeply. Near the corner of my uncle's farm there was a large plot of natural prairie that he always cut for hay and beyond it at about a third of a mile a patch of woods that escaped early prairie fires and the poplars had grown to veritable giants. On the limb of a big tree a goodly distance from its top sat the biggest wild bird I had ever seen. I stood and stared. And just as though it had been staged for my benefit, the great bird leaned forward and launched at me. Even at the distance I could hear the great wings as they bashed and broke some dead limbs in his way. For a scary second I felt that he was coming to attack me, till I saw he was rising slightly, leaving his night roost I fancied, and he passed me at a hundred yards where now, at closer quarters, he showed a gleaming head and tail whiter than snow.

When I told my father about my magnificent feathered giant he said: "Boy, you saw a Bald Eagle!" And he said a lot more on the subject that considerably deflated my wonderful bird with a chat on emblems. He indicated that our Uncle Sam could not have been choosey when he took the big lunk as emblem of a great country — a raptor that in his living habits was about half vulture.

Bald Eagle. *Wayne Lynch*

That I had not noted the bird previously was largely because the big bird had left the central plains with the Indians and Buffalo. But there was still room enough for him in the north and this one, my first acquaintance, was on his way. I felt likely we would meet again. We did. In my second year of teaching at Glenora, Manitoba, my spring bird list of migration mentions another Baldy passing northward on a nonstop ticket. I have no more Manitoba Bald Eagle notes.

Golden Eagle. Personally, in Manitoba I had little contact with the Golden Eagle. He was a rare bird and only a winter visitor to the southern part of the province. I never saw a Golden to know it in Clearsprings. In my morgue of early bird sketches there is a drawing of an adult specimen sent to me by A. A. Alford, M.D. The bird was caught by his father, Robert Alford of Oak Lake, who in winter often ran some lynx traps along the Assiniboine River about a mile from his home. This dated 15 February, 1908, when I wintered in Winnipeg.

My live contacts were few. Once in my Oak Lake years during a winter day's prowl I saw 2 big raptorial birds at the river woods, that by all the rules I knew should have been Golden Eagles but the fact that both birds showed a lot of white, knocked me dizzy. I did not know then that this was normal for young Goldens of the year.

My closest contact must have been at Boissevain when I was visiting the Whitewater Lake's wonderful island in 1905. It was August and I had stripped native and waded the big Sexton Slough to the woods on the southeastern side. Had the island all to myself, though I had a lot of noisy company in the Black-crowned Night Heron. Hidden in the shrubbery I was studying the projecting muddy point, loaded with ducks of several ages and breeds when, with no warning, a huge brown raptorial visitor dropped from the sky aiming to pin down a duck dinner. Hell broke loose! There was a roar as every duck and half-grown ducklet tried to get to deep water at the same time. The water boiled as the intruder darted here and there trying to grab a victim. But in the confusion he failed and, on realizing it, gave up this assault and winged out of sight in the Manitoba maples. Though it was early to expect a visit from a Golden Eagle, this may have been a visitor from the Riding Mountains. No later experience made me change my mind. This was early autumn, 1905, when the lake water was at a very high level.

Black-billed Cuckoo. This was one of my early birds of Clearsprings but a bird to be heard and not seen. He was not a bird of small woods. I never heard his melancholy "Cow-cow-cowing" in our poplar windbreak but always from the distant big woods beyond the coulee. He might have remained just a voice and mystery had not my father put me wise to him. I suspect he learned about this secretive neighbor in Ontario. This cuckoo was present at Glenora in 1901 and 1902 as just a distant voice from the timber near my boarding house, but entirely absent on the Boissevain prairie. I got really acquainted with him at Oak Lake island when he came and neighbored with me. When his solemn chant came from the woods a hundred yards from Heart's Desire (my summer camp) — I knew it was my time and I hunted till I found his nest. He didn't stick around and abuse me as many birds do. Both birds kept out of sight. But I knew it was a cuckoo's nest because it was unlike that of any other bird of the neighborhood. It was built in a hawthorn clump less than three feet from the ground and, although it held eggs, I didn't make note of the number or color and memory doesn't serve. I was afraid this secretive bird might leave her nest if she knew it had been discovered. When after a good wait in which the male kept silent, I visited the nest again, it contained two bristly young which I pronounced the ugliest fledglings I had ever seen.

Sparrow Hawk. On reaching Comox, B.C., 1 July 1922, we found the Sparrow Hawk an old friend of the roadside wherever there was a bit of used pasturage to keep the grass short. He was never so numerous in Manitoba in my young days there. A beautiful hoverer; but that is not the way of a falcon and when I found that on Vancouver Island he hovered for grasshoppers and seldom if ever for anything else, he lost caste. I never saw him with a mouse or other small mammal — anywhere. I never knew him to winter in Manitoba but a few always winter in coastal B.C. where I can keep an eye on him and I fear that it is the poor little slow-winged junco that pays his meat bill. Once in early spring at Glenora, Manitoba, as I was standing enjoying the sight of a little flock of juncos just arrived, a Sparrow Hawk suddenly dropped like a stone in their midst. He missed the target only by inches, but instead of picking a victim and flying it down as a real falcon would do, he made no further attempt. At Comox in winter several times I have seen him with captured juncos.

At my Oak Lake, Manitoba camp, in the pasture near the big slough one day I saw two Goldfinches, plainly migrants, south-going, where there was no cover whatever, attacked by a supposedly hungry Sparrow Hawk. He could outfly them but at every strike the intended victim beat him by a lightning-like vertical dodge. After about four strikes that failed, the hawk gave up and went off to other business with an air that said he didn't like the taste of Goldfinch anyhow!

Short-eared Owl. When I was a boy I got acquainted early with the Short-eared Owl as his hunting ground was the coulee quarter section and often he did his hunting not far from my home. I then called him the "prairie owl" as he seemed to have nothing to do with cover as most other owls do. He was commonest at Oak Lake because there was more uncultivated land there. But in my folio of early drawings, before I started saving specimens, I have a sketch of a Short-ear taken in 1905 at Boissevain, 21 October, from the prairie north slope of Turtle Mountain — the cultivated side. A few days earlier I had played a game with him and I just had to see the outward mechanism of that marvellous ear.

I was waiting in a stooked wheat field for a Mallard duck flight and just at sunset a Short-ear took off over the field in that bouncing flight that always seemed to say that he had too much wing for his small body, At my decoy squeak he started confidently on a bid for a mouse meal. It was not the usual thing for him to hunt among shocks but he seemed to know what he was doing. At about 100 yards I pursed my lips and gave him the mouse squeak I had used successfully to decoy a prairie fox or coyote or other mouser. He reacted instantly on his beat, turned and came on a bee line for my shock. I hunkered down, hid my face and then didn't move a muscle. His direction finder was working 100 percent. And now 3 or 4 feet above my head he shouted "Mouse!" — this from a bird I had thought voiceless!

I waited a while and then tried him with another mouse squeak when he was in another part of the field and he did his part of the act at twice the distance. But when I tried him at an incredible distance he showed that he heard me by a nervous little start and then acted: "No, not three times!" and went on with the business of getting a real mouse meal. I was now glad no ducks had come for I had learned about the magic ears of *Asio flammeus*.

Long-eared Owl. I have probably only one record of this small owl before 1903 when I spent the year

Short-eared Owl *Fred W. Lahrman*

rural teaching (Runnymede) at Oak Lake and was surprised to find the species common there. Previously, about 1893, one morning I found a small brown owl in Clearsprings sitting on our house. What intrigued one was the length of his "horns". These ear-tufts were long and slender. He was far too small for a Great Horned Owl which by now I was well acquainted with; and the Screech Owl, though "horned", was not known then in Manitoba. But at Oak Lake in 1907 the Long-ear was the commonest of the small owls and perhaps the least known for I never saw him hunting. I found without exception that he used an old crow's nest to raise his family, never to my knowledge building nest of his very own. He also showed a strong preference for the nest in a willow-clump.

I decided that crow-nesting was rather an owlish trait as the Horned Owl too did it sometimes. But the old terror of the woods had a fair excuse. He was such an early nester that he wanted to be building while the best nest-material was still often under snow. He showed good sense in using crow architecture only a year old. I located one Long-ear's nest at the very edge of town on the sandhill side. It became a habit with me while on the prowl to examine all crow-nests for a pair of long ear-tufts, usually plain, if present, above a flattened derelict structure. Some of the Long-ear nests were quite low and I got some good snapshots of the fledglings but none of the parent birds. When interviewed the young had a comical way of stretching erect to their utmost length, trying to make themselves look like something they were not.

Great Grey Owl. A winter visitor only to the southern part of Manitoba — possibly visiting the Turtle Mountains in the southwest as it did to Clearsprings in the south-east. One winter day in 1895 — dated, as it was my first winter to use a shot gun — my cousin William Laing and I were hunting Snowshoe Rabbits in my father's "Big Bush" south of my home. We kept about 30 yards apart — each of us that way being more or less "dog" for the other — and suddenly I spotted a big grey bump in a tree above Bill's head that resolved into a big owl that was showing more interest in Bill than fear of him. I fired at once and dropped the bird almost on my cousin's head.

It was the first Great Grey Owl I had ever handled. I mounted this bird, getting some help from a small treatise on taxidermy among my father's books, sending to Winnipeg for the glass eyes and wondering how come so big a bird could do with such small peepers. My mother gave this prize away to a city friend who admired it. She didn't like stuffed birds at large in the house because they collected dust but couldn't stand dusting.

I think it was a year later that one evening, looking across the coulee, I saw a dark bump in a willow-clump of the light timber leading away from my uncle's barnyard. That called for immediate investigation, and gun in hand, I raced across the Big Bridge and up the Tom Laing driveway intending to start a stalk from their horse stable. I had just reached the stable yard gate when there he was — as expected, winging toward me across the stable yard, a big floppity owl — when there came a gunshot and the visitor dropped. My cousin Tom had beaten me to the stalk. But he verified the fact that while I was hurrying over the grade I had heard a single, strong hoot from the location of that owl. He too had heard it before the owl took wing.

Richardson's Owl. I also have some notes on the tiniest member of this interesting family. On 6 November 1906, a winter I was spending in study and living at the new Winnipeg home of my parents, one morning I spied a tiny owl close to our front door not more than 10 feet above the sidewalk of Carlton Street. He was perched in a shade tree but, of course, at the date there was no leafage and he was very plain. I had every opportunity for observation of the tiny, round-headed, robin-sized member of his tribe and no hesitancy in calling him Richardson's Owl or "Boreal Owl" of the 1957 AOU Check-list. I saw him leave his day perch in the evening when he winged over to the little Carlton Street Park, but I suspect he was lost in the city and would not survive.

I have another record of this tiny northerner lost in civilization when on 5 January 1901, I picked up a dead specimen of the same species in the machine shed of the Fraser farm when I taught the Glenora rural school. Plainly this visitor had died of starvation during record December cold weather. From this bird in hand and the memory of the Winnipeg visitor I made sketches for my folio of new birds.

Hawk Owl. A very rare medium-sized owl in the latitude covered by most of my bird notes. In 1903 in early autumn, my first year of teaching rural Runnymede school at Oak Lake, someone shot a Hawk Owl, mistaking it for a hawk. This is an easy mistake because, although in hand, dead, this bird does show some owlish propensities, in the air he is a Peregrine Falcon. Knowing my interest in birds he sent the bird to me. But he did not give it to me as he wanted to have it mounted, and so now I have no drawing of it in my "morgue" and find no details of it in my diary. The same fall in late November and early December I got 2 weeks holidays for a moose hunt in the Riding Mountains, Manitoba. I didn't get a moose, but I met the Hawk Owl at home almost daily and learned something of its hawk-like habits. For one thing, it made a lot more day noise than most owls do.

Burrowing Owl. A misnomer; he should have been named "Burrows" owl and I suspect that in Manitoba he

Hawk Owl *Ray Tuokko*

cannot be dated as he was a satellite of the Richardson's Ground Squirrel, so common on the western plains in the Buffalo days and chief food of the Badger that dug him out for a living and in so doing left snug burrows for the little owls that cannot dig for themselves.

The little ground owl was likely more numerous in the Buffalo days than later. As soon as the homesteader blackened the broad acreage of grassy plains to grow wheat, he poisoned off his ground squirrels, and filled the Badger holes and so made life impossible for the owls. It is possible that some of the ground owls did cross east of the Red River before my time. Buffalo skulls were common trash in Clearsprings and boggy ground was full of their bones. The scrub-grown knolls along the coulee were riddled with Badger holes where the "scrub-gophers" (Franklin's Ground Squirrels) had been dug out. But the settler as a rule made short work of the Badger. His big holes in cultivation were intolerable and his winter pelt was a valuable fur.

So there were no Burrowing Owls in my time at Clearsprings nor did I find any sign of them on the Glenora prairie. I met my first ground owlet at Boissevain in 1904 when the hired man at the Frank Latimer farm where I boarded brought home a young ground owl with a load of gravel from a pit several miles distant. The well-grown owlet had been exposed when a breakdown at the pit had made him homeless. He was a very tractable little codger but very noisy which we cured to some extent by feeding him "worms" of lean, fresh meat till Dave took him back to his home pit next day and made a new hole for him. We hoped for the best.

At Oak Lake in 1903, in regard to ground owls, the reverse was true. We found the Burrowing Owl in possession of a lot of territory. He was on the Robert Alford farm three miles east of town. A farmer north of the Assiniboine River claimed a family. He was also on a wide stretch south of the town and ranged a good long way west up the Pipestone Creek country. Young Robert Alford, senior class student, showed me some splendid pictures he had taken with the old camera equipment I had turned over to him when I invested in something newer. This was over an area of mixed farming not like the Boissevain wheat country. There was room for some interesting little owls that seemed breeding successfully everywhere. There was a lot of sandy land, breeding gophers, little poisoning was done and large families of both gophers and little owls were the rule. It would not have been a surprise to me to find the owls feeding young gophers to their own young. The temptation must have been strong!

Screech Owl. In the spring of 1921, I had my first Manitoba adventure with an Eastern Screech Owl. After my spring work with Taverner for the National Museum on the Saskatchewan prairies at the end of June, he gave me an option as to where I would like to spend my remaining three months of service on the prairies. I chose Oak Lake, Manitoba, because I knew it to be a very interesting region biologically and I had already sampled it some while teaching there. I had scarcely driven my tent pegs again at the old campsite I called "Heart's Desire" when I found a local biological problem waiting for me. Something was very vocal at nights to disturb the sleep of the local campers. As yet no one had seen the author, though most listeners were agreed on it being some sort of bird, but who ever heard a bird like that at a time birds should have the head under the wing? There seemed a feeling in the air that now that a bird man was on the scene, he should solve it.

But he had to hear it properly first, and in my first two nights in my camp the disturbance drifted faintly on the night air from the far east end of the road that ran down the campers' island. What I could make of it so distantly was that it was a high pitched whinny of a dozen or so notes that, beginning high, running rapidly down to a much lower key at ending — one straight exclamation. Nothing *soto voce* — it had power. I could whistle a fair imitation of it. I was doing so to company in camp when suddenly a bright light flared in my think-tank. "Why that bird is making the call that Dr. Sutton made when he tried to decoy the Comox, B.C., Screech Owl out of the health camp, and failed and I had to show him how!! The Semple-Sutton duo from Pittsburg had worked on Comox ornithology a year earlier.

We were sitting by a tiny excuse for a campfire in the light of the camp lamp when I whistled a few calls in an exhibition of what I would try next when a visitor suddenly exclaimed, "There he is!" and pointed behind me, I turned in time only to see the maple leaves twiddling. Our visitor had come, taken a look and beat it. My human visitor said he had seen a little owl.

Well I couldn't fail now. Next evening I went much farther down the road before I turned my whistled whinny on the air. I got a reply first try; a little owl came and I got a shot and carried to camp what I figured was the first Manitoba specimen of a Screech Owl. The eastern form of course. In Oregon and Comox, B.C. I had been playing with the Kennicott, west coastal form, evidently quite a different bird in its habits.

Woodpeckers. On reading my early Manitoba bird records, one might be led to think I had a crush on the birds of the owl tribe, but this would not be true. I have told about things pretty much as they happened and Manitoba was rich in owls. I have really much more regard for the busy hard-working woodpeckers. The preservers and house-carpenters of the woods, bringing death to wood-borers, not to weaker neighbors of flesh and blood. And here are two fine woodpeckers I met in the winter of 1903 when I visited the Riding Mountains. A new small sized woodpecker with an all black back sent me scurrying to my bird guide. The Arctic Three-toed Woodpecker, never seen by me farther south. And here too I met the Cock-of-the-Woods (Pileated Woodpecker), the huge, handsome near crow-sized woodpecker that my father had met in the woods of Ontario but never in Manitoba. Little then did I think that one day he would be my neighbor in Vancouver Island woods starting great echoes and raising his noisy family in a home chopped from a big alder by the creek, a stone's throw from my little barn where at milking time I could always count on a rumpus while the young were in the nest. In song season the big fellow can be heard half a mile or more and strangely he sings the same songs as the Red-shafted Flicker and many good bird watchers get fooled by this. I am not sure about the pitch but the big fellow invariably drops the last note of his even roll; the flicker does not.

My first Manitoba **Scarlet Tanager** dates 10 May 1905, Boissevain, when I was the teacher in Caronton rural school. The William Latimer home, at which the Manitoba maples were well grown and a popular calling place for migratory birds, was close to the school and son Wilford on seeing the brilliant bird migrant, shot it and laid it on my school table. This tanager was a good example of that vast migration of eastern birds moving into the northwest. Ten years later Scarlet Tanagers were common tenants of prairie wind-breaks. As I was not then saving specimens, I made a sketch for my "morgue" and stuffed the bird, a present for Wilford.

Redpoll. An interesting little winter neighbor was the Redpoll; but I should put it in the plural for two reasons: no one ever saw a redpoll alone and because in the southern migrations of these northerners, the two species combined. This conduct is not common as most birds in migration prefer to travel in flocks of their own kind. There are good reasons for this. I met my first redpolls in Clearsprings where at first spring blackening of the yard a flock enroute north would drop in for weed seeds; or perhaps they joined the snowflakes before the granary door where my father threw the weed-seeds from the fanning mill. I may have met the species at Glenora, but I saw none on the Boissevain prairie and it was Oak Lake that provided me with most redpoll experiences. A mile east of the town along the CPR railroad track was an old, abandoned field between the track and the sandhills that still grew an annual crop of weeds, mostly tall-stemmed, that were not buried under winter's snow. There was cover enough for shelter in the willow-clumps and light timber in the sandhills nearby; and the place must have had everything the redpoll heart desired, for a flock always wintered there. Also it was right on the course of one of my after

Common Redpoll *Lorne Scott*

duty walks which were a regular part of my life then.

One trait of redpoll life was a thing that greatly pleased me. This was his musical heart. He was the only winter bird that really sang at this season. As the sun rose higher and grew stronger, the Black-capped Chickadee would sing his stingy two-note song: "Spring soon!" and the Tree Sparrow might chuckle musically a bit. But *Acanthis flammea* took music seriously and put on the air a full scale orchestra and gave a heart-warming chorus.

I was always interested too in glassing the flock for some of their blond cousins, the Hoary Redpoll. And never disappointed. They mixed perfectly. The redpolls of course were winter visitors only. I never saw one nest south of Lake Athabaska in northern Alberta.

From the scientific point of view I had a very successful four months at my old camp ground at Oak Lake. I suspect the abundance of oak timber there had an effect on the bird life. At that time I found the following birds not seen or taken elsewhere: Krider's Red-tail, Richardson's Merlin, Eastern Pigeon Hawk, Western Pigeon Hawk, Western Kingbird, Say's Phoebe, Mountain Bluebird, Ferruginous Hawk as well as small doubtful fry of warblers and sparrows.

I was lucky to have friends to help me. One was Miss Edna Burns, the star student of my class in nature, when I taught high school in Oak Lake Intermediate town school. Now she had a little cabin at the lake, also a fliver and took an interest in getting me into new fields that I could not reach on foot. It was through Edna on a trip to Hartney one afternoon that I added the Mountain Bluebird and Say's Phoebe to my list. For my new Ferruginous Rough-legged Hawk my thanks went to another old friend, Wm. Beveridge, local school inspector living in Virden who, on Saturdays, was apt to show me new fields and this trip into the Pipestone country was lucky.

I had another young friend, Herman Battersby, early teenage, very interested in my work. Herman lived a couple miles off across the sloughs eastward on a farm and was a born naturalist if ever there was such. There was a road across the sloughs and often after work at night Herman drove the family car over to my camp to see my damage of the day. One evening in early dusk as I was returning to camp on the road where it is closest to the lakeshore, something jumped in the roadside grass that I first thought a frog but quickly saw it was not. I gave chase by hand and when I had grabbed the mouse and squeezed it safe I found I had my first Manitoba Pouched Mouse. I had never seen one before. I was gloating over it in the camp lamp when Herman arrived and I showed him my treasure. To my dismay he was not a bit excited. "Yes", he said, "they are around. I'll get a couple for you. I've plowed out two or three". And later he did get them. And with them he gave me advice on where to set to catch the long-tailed jumping mice. "Try the nettle patches!" he said.

When I tackled the story of early Manitoba bird records I had not given much consideration to the size of the subject. A great number of birds altered their way of life to conform to the human settlement of a vast continent. That the human conquest of the North American continent ran northwestward and the bird conquest did the same is, of course, significant but the physical shape of the continent compelled it. The Great Lakes and the Hudson Bay's mighty central thrust from the Arctic accounted for that. Though I had a dozen record-book sized diaries and more than 20 shirt-pocket-sized miniatures of field notes to work with, covering about 85 years of a long and active life afield, I can touch lightly on but a few bird species.

HAMILTON MACK LAING

H. M. Laing must surely be Western Canada's oldest living naturalist. Born in 1883, he grew up near the present site of Steinbach, Manitoba, and then taught school at Oak Lake, Manitoba. There he took Manitoba's first specimen of the Western Kingbird and wrote a 249-page book, *Out with the Birds*, published by the Outing Publishing Company of New York, based on his bird observations at Oak Lake.

In 1920 he was a naturalist with Francis Harper's expedition to Lake Athabasca, and in 1921 he was with P. A. Taverner in the Cypress Hills area. These were his only major studies in Saskatchewan.

Early in 1969, I began correspondence with him, and asked whether he could write some of his reminiscences of bird study in the Prairie Provinces. He told how busy he was keeping in his house and garden, felling trees and cleaning up the beach of his ocean property at Comox, British Columbia, remarkably hale and hearty. He wrote long and interesting letters, and as the years went by he kept physically active to a degree not expected for a man of his age.

The material published here was hand written from memory and with occasional reference to notebooks, when Laing was 96 years of age. — *C. S. Houston.*

Sandhill Crane *L. A. Morgotch*

WHERE DO SANDHILL CRANES RAISE THEIR YOUNG?

W. J. DOUGLAS STEPHEN, Canadian Wildlife Service, Prairie Migratory Bird Research Centre, Saskatoon, Saskatchewan S7N 0X4.

I want to use satellite-produced maps to indicate potential Sandhill Crane breeding densities in Canada. The simplest way to do that seems to be to compare the kinds of places Sandhill Cranes usually use for nesting and rearing their chicks with information about land that comes from satellites. Some of the places in Saskatchewan and Manitoba where

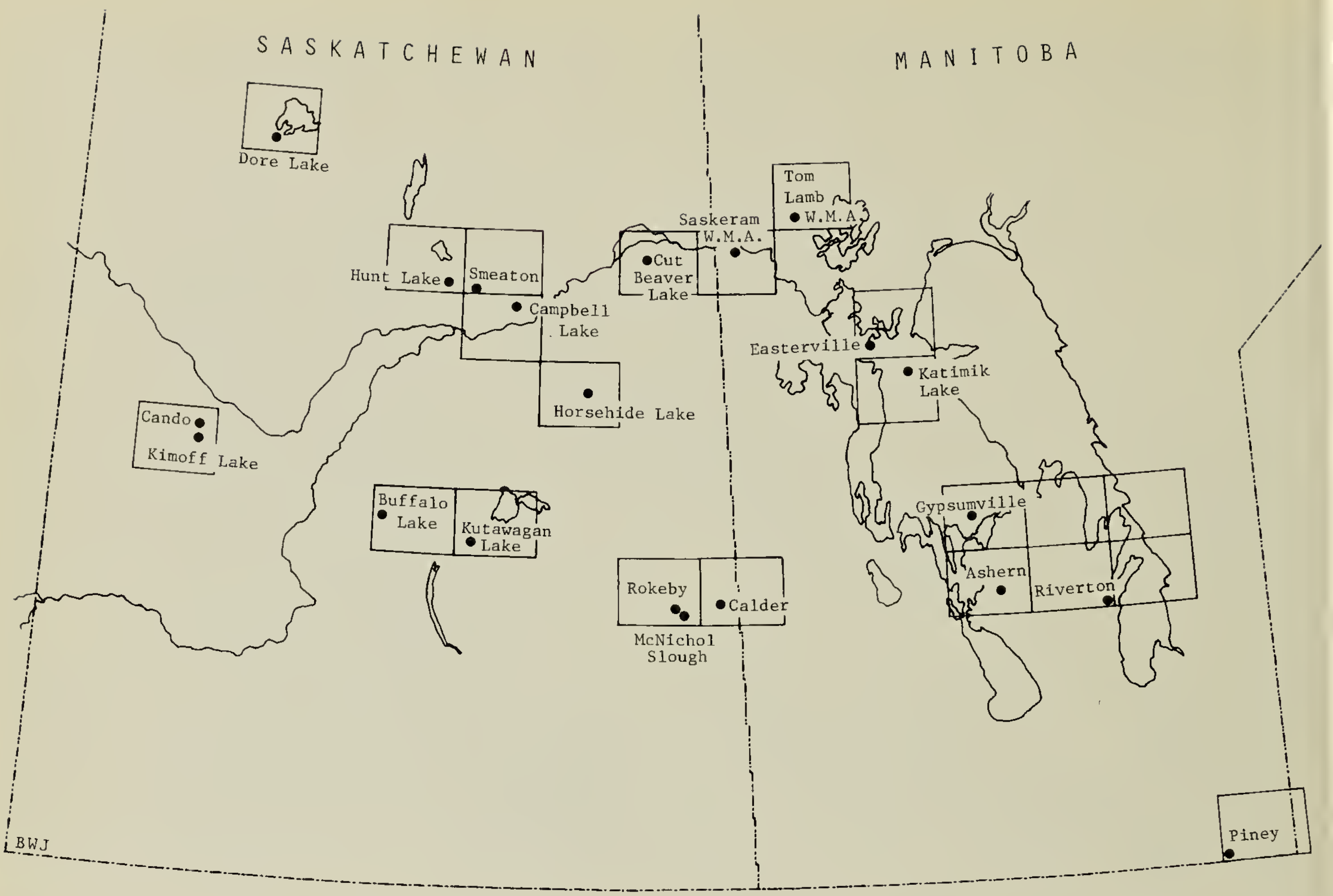

Figure 1: Distribution of recent Sandhill Crane breeding records in southern Saskatchewan and Manitoba.

breeding Sandhill Cranes have been recorded recently are shown in Fig. 1. Those places may be used every year, only occasionally or they may no longer be used by Sandhill Cranes. The way to find out is to see if cranes are present or absent for at least 3 consecutive years and, if present, attempting to raise chicks. To speed up the comparison with satellite information, I am looking for volunteers to check specific sites shown in more accessible parts of Saskatchewan and Manitoba in Fig. 1 I will check similar sites in more remote areas myself and likely new sites where travel is more costly.

I will provide maps and satellite scenes for each site to any volunteer willing to thoroughly check the site for evidence of Sandhill Crane nests or young. The easiest time to get that information is when chicks are more than half grown but still flightless, usually from July 15 to August 7. Information on nests is just as good but Sandhill Crane nests are very hard to find and downy chicks are even harder to find.

The time required could be several hours on one or more days, watching from a vantage point, walking or using any means of seeing breeding cranes. Canoes or boats are not needed. A motorcycle might be useful for travel near some wetlands. If a crane family is there, it may be seen as soon as the observer arrives at a marsh. I will be pleased to provide more information to anyone interested in this opportunity. I can provide maps, satellite pictures, other information, encouragement and gratitude, but not much more. I would like to know of anyone's interest for 1980 by 26 June.

OUR AFFAIR WITH A RUFFED GROUSE

CLARENCE FORSBERG, 407 Albert Avenue, Saskatoon, Saskatchewan S7N 1G2.

In the evening of 1 September 1978, while my wife, Ann, and I, along with visitors from Ontario, were sitting in front of our mobile home at Moon Lake, south of Saskatoon, a male Ruffed Grouse walked out of the bush and circled us at a distance of about 15 feet. At Ann's suggestion, one of our visitors tossed out Choke Cherries, each one successively closer to his chair. The grouse continued to walk about in a majestic manner, but somehow never missed noting the location of each berry and eventually picked it up. This continued until the beautiful bird was within 3 feet of our visitor and there were no more berries. He then dangled his fingers. The grouse, while showing no apparent attention and continuing to move about, suddenly flew to grasp one of the fingers in its beak for an instant and returned to the 3-foot position. After one repeat performance our visitor chose not to risk his fingers again. The elegant bird continued to walk around us as suggestions were made for a suitable name. Pierre was nominated and favorably accepted. By this time it was getting dark and Pierre walked back into the bush.

The next evening, Ann and I drove to Moon Lake and immediately went down to the trees 60 feet below and 200 yards from our mobile home to pick berries. After picking for awhile we noticed Pierre within 10 feet of us. Twice, during about 2 hours of picking, he apparently tried to fly up on Ann's shoulder when her back was turned to him. When it was too dark to pick, we walked back to our mobile home with Pierre walking and running about 10 yards behind us, never choosing to fly even up the very steep portions of the path. Again, when it was quite dark, he walked away into the bush.

Several days later, I went to Moon Lake to jack up one of the outside corners of the anteroom. When I had removed the skirt from one side of it, I noticed Pierre at my side. Being afraid he might go in under the mobile home, I tried to scare him away. But nothing doing — that brave bird stood his ground and it was not until I picked up an old raincoat and swung it around that I got him to move off several feet. I gave up trying to keep him away and he showed no interest in getting under the mobile home. Whenever he was within a few feet, I was careful not to make a sudden move in his direction in case he might fly at me. During the morning he walked away into the bush many times but never stayed away more than a few minutes at a time.

Over the period 1 September to 25 November we were at Moon Lake 11 times. On all occasions, except one, Pierre walked out of the bush to visit us. The exception was one late evening in September when it was very windy, cool and cloudy. We would call his name and whistle on our arrival and he would walk out of the bush over one of his two paths within 5 minutes. He always arrived by walking. Only on one occasion did he leave by flying. He exploded into flight about 10 feet from us with a whir of wings for two seconds which propelled him sailing at high speed for 150 yards where he disappeared among the tall poplars below us. We were a bit stunned and duly impressed by the power of this unusual bird.

Later, on another visit, Pierre followed us on our walk through the woods below, flying silently from the ground or from trees. Around the mobile home he would sometimes fly quietly to view us from the roof or from the top of our car. The open door of the anteroom was a favourite perch to which he hung tenaciously when the wind blew the door or when we wished to close and lock it before leaving. Once, from his perch on the door, he flew down to deliver a good bump on the back of my head. At no time did we offer Pierre anything but a few berries picked at Moon Lake, his natural food, and this only on three occasions. In late October, when large dry leaves from our northwest poplar were lying on the ground, we were pleased to see him eat a couple of these, stem and all, with apparent relish.

Our visit from Pierre on 5 November was the most memorable. Some of our first snow remained on the wet ground in the bushes and yet Pierre appeared as usual within 5 minutes. We stood around for a long time while he periodically walked back into the bush as though inviting us to follow. When it was getting dark and we thought he was not coming back any more, we walked the 75 yards out to the road, where our car was parked. We were about to drive off when Pierre hit on the windshield, slid down on the hood and stood looking in at us. After a minute he got on a sloping part of the hood and slid onto the ground. He walked through the ditch and under our yard fence. Then as we drove off he ran along inside the fence. Since the hill was a bit slippery we did not stop until we had reached the top. Thinking the fall "crazy period" for Ruffed Grouse should be over and that we might never see him again, we sat for a long time looking back, but no Pierre. We drove off a little sad but also happy with our experience with this beautiful and unforgettable bird.

As it turned out we did see Pierre again on 25 November, 6 and 20 January, and on 21 April, but he was increasingly wary. On four visits during this period he did not appear and not again after 21 April.

Ruffed Grouse nest *Wayne Lynch*

SHARP-TAILED — SPRUCE GROUSE MIXTURE

PAUL J. KRAHN, Manitoba Department of Natural Resources, Box 2550, The Pas, Manitoba R9A 1M4.

I am a Conservation Officer stationed in The Pas. I was driving along a gravel trail near Reader Lake about 1015, 19 September 1979, when I saw a group of grouse on the road ahead of me (the day was cloudy and the temperature was approximately -12°C). I stopped my truck about 15-20 metres from the grouse, turned off the motor and watched the birds. I sat still inside the truck and the grouse quickly forgot their alarm. I was surprised, as I started counting the birds, that there were some Sharp-tailed Grouse among the Spruce Grouse which were pecking gravel and feeding on the vegetation at the sides of the trail. There appeared to be three male and five female Spruce Grouse, and five Sharp-tailed Grouse of undetermined sex; there may have been more as it was difficult to count them as they moved in and out of the vegetation.

As I watched, some of the Sharp-tails did their mating dance routine which I have seen them do in the spring. They danced with less intensity than in spring but nevertheless some of the dances lasted 2-3 seconds. The unusual part was that on three occasions the object of a Sharp-tail dance was a Spruce Grouse (twice a female and once a male). The reaction of the Spruce Grouse ranged from absolute disdain as exhibited by one hen, to mild alarm as exhibited by the other two birds; this prompted them to take not more than a few steps away from the dancing Sharp-tail.

What surprised me most was that the Sharp-tails seemed to have as much affinity for the Spruce Grouse as they had for each other. When some Spruce Grouse moved across the road, three of the Sharp-tails followed them while the other two stayed in the brush and I did not see them again.

I observed these birds for 20-25 minutes and during this time tried not to influence their behavior in any way. I took a number of photographs of them from inside my truck, the clarity of which suffers due to a dirty windshield. When I finally got out of the truck to get some closer pictures, the grouse moved into the brush and, when I got too close, they flushed in a group and flew into some adjoining young aspen. Even at this point the Sharp-tails remained with the Spruce Grouse.

This sighting occurred in young aspen growth on a gravel ridge (probably second growth after a fire), with the only coniferous trees in the area being a few small spruce. Other vegetation in the area included White Birch, Choke Cherry, Wild Rose and Raspberry.

I am very curious to know if other people have seen similar occurrences and would be pleased if they would write to the *Blue Jay* or write to me personally.

A BLACK DAY AT WASCANA MARSH, REGINA

ROBERT KREBA, Saskatchewan Museum of Natural History, Regina, Saskatchewan, S4P 3V7.

A phone call from Fred Lahrman on 6 November 1978 presaged one of the blackest days in the history of Regina's Wascana Marsh. Fred and Lorne Scott had just seen a full-plumaged male Black Scoter near the waterfowl display ponds at the marsh. As an added bonus, he said that a male Black Duck was also present.

When I arrived about half an hour later, at 1400, Fred and Lorne were photographing the scoter. What I saw was a jet-black duck with its head under its wing, dozing in the water about 20 yards from shore. While this was certainly a Black Scoter, the sight was somewhat less than stimulating.

Fred informed me that they hadn't seen the Black Duck since returning from the Museum with his camera equipment. Just as they were readying themselves to go, Bob Luterbach drove up. He had been alerted earlier by Lahrman. Bob and I scrutinized the uncooperative scoter. After several minutes of this, we determined to separate and track down the missing Black Duck.

A few minutes later, Bob was back. He wouldn't tell me what he had found though. He set up his scope on the car window mount and focused it on the far side of the marsh. "Now, look and tell me what you see". I looked, but all I could see were geese, Canada Geese, with nary a rare duck among them. But wait, what was that smallish dark form floating placidly in their midst? "It's a Brant!" I exclaimed.

The next question was, what kind of Brant? We looked carefully, but could not decide, as the key fieldmark — the belly — was below the waterline. Bob went to phone Lahrman.

In the meantime, the Brant obligingly left the water to stand on the ice with a group of resting Canada's. This enabled us to at once identify it as an adult "Black" Brant, the western race, formerly regarded as a species separate from the light-bellied eastern race of Brant. Fred came and was able to photograph the Brant in spite of the distance and poor light conditions.

Margaret Belcher arrived with Elizabeth Cruickshank at about 1500. She had independently discovered the Black Scoter earlier and had returned to show it to Mrs. Cruickshank. The scoter put on a better show at this point, revealing his black head and bill with its bright yellow knob. The plumage was jet-black, as were the feet and eyes. The bird held its tail cocked up and resembled some unlikely relative of a Ruddy Duck more than anything else.

In all this excitement, the Black Duck was all but forgotten. We made a few half-hearted surveys of the marsh for it, but it was not to be found. Bob and I then left. At 1600, Fred Lahrman saw the Brant fly off with a flock of Canada's, going out to feed in the grain-fields southeast of the city. He drove out and scanned the feeding flocks, but was unable to find it there.

An intense weather system of the preceding two days was certainly the source of both the scoter and the Brant. Very strong west to northwest winds blew in on 4 November with winds gusting up to 110 km/hr. through the night and most of the 5th. Fred G. Bard, in personal communication with Fred Lahrman, reported similar winds from the west to northwest while travelling west to Surrey, British Columbia, from Calgary, Alberta. These were even stronger, gusting up to 120 km/hr. Whether or not this system was responsible for the Black Duck is uncertain. The few Regina area sightings of recent years have been at this time, late in the fall, so it is likely that the Black Duck's presence was coincidental.

The Brant was the first recorded at Regina and is only the ninth record for Saskatchewan. Sightings are mostly of one to three birds, though flocks of as many as eight and 18 have been reported.[1] [4] Fred Lahrman saw another Brant 11 April 1980 at Tregarva slough swimming in the midst of a flock of 1000+ White-fronted and Canada Geese. Previous sightings have been summarized by Dzubin and Hook[3] and Belcher.[2]

The Black Scoter was the second Regina record, the first being a female and an immature, seen at the Condie Nature Refuge, northwest of the city, on 16-18 October 1976.[2] These birds were photographed by Lahrman and constituted the first confirmed record for the province. Previous sightings were: 24 October 1970, a female or immature at Tobin Lake, and 31 October 1970, a female or immature on the Saskatchewan River, north of Nipawin, both sighted by S. D. Riome.[6] On 14 October, three scoters, and 15 October 1975, two scoters were seen at Blackstrap Lake by A. R. Smith.[5] More recently, a probable adult female Black Scoter was sighted on Wascana Lake, Regina, on 23 and 26 October 1979, by B. Luterbach and several others.

The Black Scoter was not found on 7 November despite intensive searching by many observers. We did manage to find the Black Duck, at last, as well as a beautifully plumaged male Hooded Merganser.

At noon, we all left for lunch, with the exception of Bob Luterbach, who was rewarded by the reappearance of the Brant at about 1245. It flew in with a flock of Canada Geese, returning from foraging for waste grain in the fields. For most of the afternoon, the Brant was admired by a large group of Regina birders, as well as a few passersby who were attracted by the unusual crowd of people bristling with binoculars and telescopes. The Brant was most cooperative, affording much closer views under ideal conditions, as well as a series of colour slides. The Brant was not seen after the 7th.

[1] ARMSTRONG, F. B. 1974. Brant at Carrot River. Blue Jay 32(4):250.

[2] BELCHER, M. 1980. Birds of Regina. Sask. Natur. Hist. Soc. Spec. Publ. 12, Regina, Saskatchewan.

[3] DZUBIN, A., and N. HOOK. 1966. Black Brant records from western Saskatchewan. Blue Jay 24(3):124-126.

[4] HARRIS, W. C. 1976. *in* E. M. Serr, Northern Great Plains Region, Am. Birds 30(1):87.

[5] O'NEIL, P. 1975. Fall migration, Saskatoon Field Notes, No. 17.

[6] RIOME, S. D. 1971. Sight records of the common Scoter in Saskatchewan. Blue Jay 29(1):31-32.

CANADA GOOSE AND MALLARD DUCK NESTING ON A STRAW BALE

DENNIS E. JELINSKI, Department of Geography, Brandon University, Brandon, Manitoba R7A 6A9.

Large round straw bales have been placed as artificial nest sites for Canada geese by Ducks Unlimited (Canada) on selected water control projects. On 10 May 1978, during an evaluation of these nesting structures at Waterhen Marsh near Kinistino, Saskatchewan, a Mallard duck and a Canada Goose were flushed from one of the bales. (Brace has identified the geese at Waterhen as *B.c. maxima.*[1]) Examination of the bale disclosed a Canada Goose nest with four eggs and a Mallard nest with ten eggs. Both nests were being incubated and were approximately 50 cm apart. The normally flat-topped bale had undergone change in shape due to decomposition and slumping. The goose nest was situated slightly above the level of the Mallard nest (Fig. 1).

A review of the literature indicates

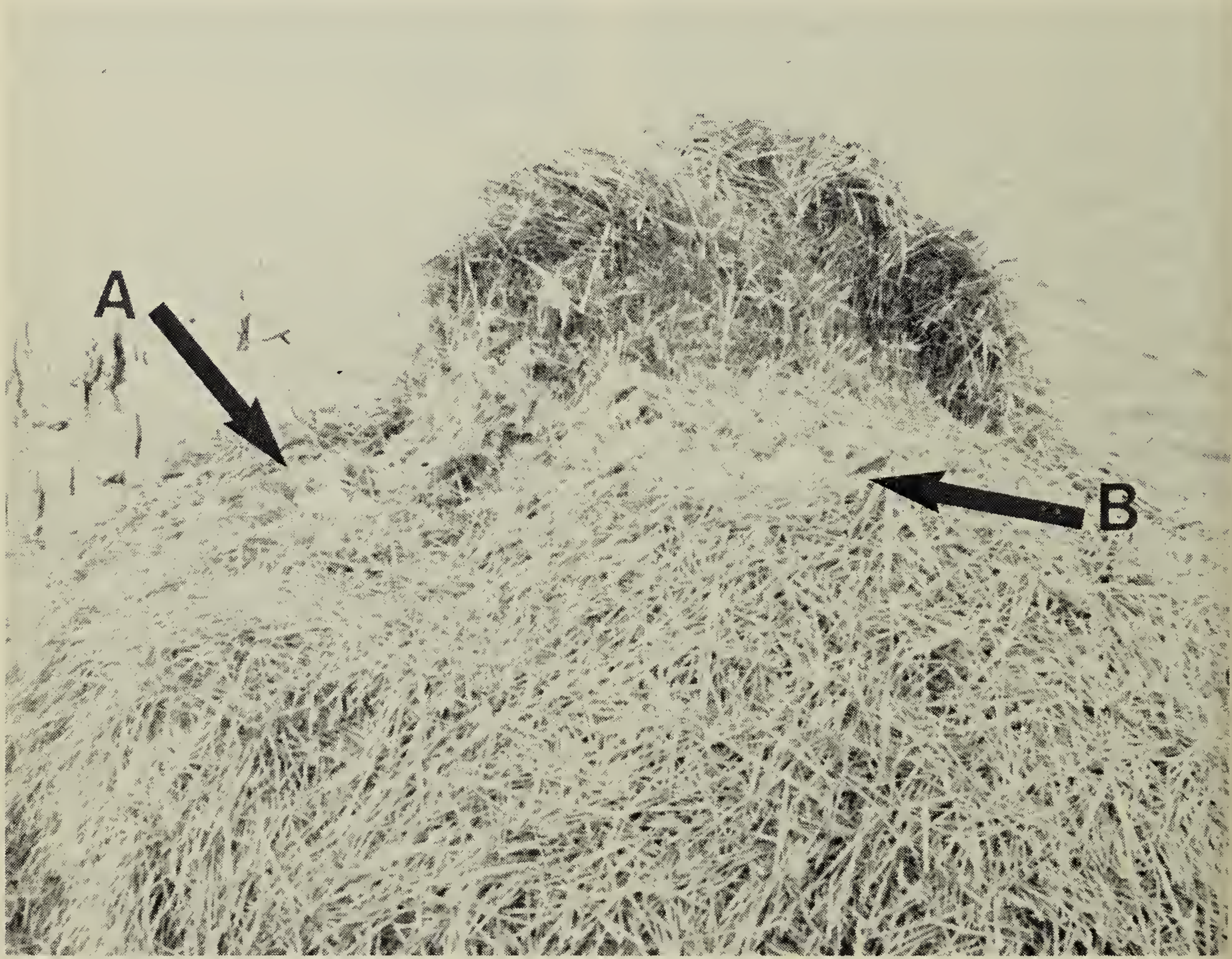

Figure 1: Positions of Mallard nest (A) and Canada Goose nest (B) on the round straw bale.

that nesting Canada Geese exhibit varying degrees of tolerance towards ducks near the nest site. Dow found a Mallard nesting "within a few feet" of a nesting Canada Goose on a haystack.[3] Mather reported that nests of a wild Mallard and a wild Canada Goose were located only 1.2 m apart on a pond in Allentown, Penn.[6] Ewaschuk noted ducks walking in close proximity to incubating geese with no apparent response from the goose or gander.[4] However, Cooper observed that aggressive action was taken by nesting geese (*B.c. maxima*) towards all ducks near their nest.[2]

My observation shows that ducks can nest in close proximity to Canada Geese. It also supports the conclusion of Giroux who suggested that nesting ducks were attracted to man-made islands used by nesting geese.[5] He reported that ducks, especially Pintails and Mallards, benefit from a commensalistic association with Canada Geese in that geese are adept at keeping predators away from the vicinity of their nests, and consequently from nearby nesting ducks.

The investigation was done under the auspices of Ducks Unlimited (Canada). R. W. Boychuk supervised the study. J. F. Giroux provided valuable suggestions and criticisms of this manuscript. C. L. Glenn, D. F. Hackett, and R. C. Rounds provided helpful comments.

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[1] BRACE, R. K. 1972. A study of the nesting ecology, productivity, and mortality of Canada Geese at Waterhen Marsh, Saskatchewan. M.Sc. Thesis, Univ. Saskatchewan, Regina Campus, Regina, Saskatchewan. 162 pp.

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COMMON GRACKLE WINTERS AT BRANDON, MANITOBA

MAMIE McCOWAN, 1415 - 8th Street, Brandon, Manitoba R7A 3Z6.

When I have noticed in Christmas Bird Counts, species that usually go south for the winter, I have wondered how many of these birds would survive severe January weather.

Early in December 1979 a Common Grackle was noticed in this neighborhood and has been seen through the winter. It frequented the yard of my neighbor Barbara Robinson, who has a bird feeding station and good tree and shrub cover. It came to the feeding tray for sunflower and other seeds. With the approach of spring the grackle has been heard every day piping its song. Now at the end of March the juncos are back and the grackle is still with us. Hearing its song when I first go out in the morning has brought to mind these lines of a hymn — "Morning has broken like the first morning, blackbird has spoken like the first bird".

Glaucous Gull *Fred W. Lahrman*

GLAUCOUS GULLS SIGHTED AT REGINA

FRED W. LAHRMAN, Saskatchewan Museum of Natural History, Regina, Saskatchewan S4P 3V7.

The morning of 7 May 1979 saw a world of white. The ground was covered with approximately 5 inches of newly fallen snow. The sky was overcast and snow was still falling intermittently.

When I arrived at the lookout point by the grain bins near Goose Island I saw a huge white gull on the island. This gull, a second-year immature Glaucous Gull was being harassed by a number of Ring-billed, California and Herring gulls as it attempted to feed on a dead fish (Northern Pike). It picked up the fish and flew over a bank where it was out of sight.

Lorne Scott arrived a moment later with his camera, so we went over to the island hoping to get a picture. As we approached the gull, Lorne immediately spotted another, a gray first-year immature standing in the snow beside the first. They looked huge as they stood among the other gulls. Lorne took photos as they flew about and then they left. On 8 May Robert Kreba and I saw the white gull again as it flew about near Goose Island and then alighted near the Power House.

A number of Regina birders saw it, including M. Belcher, G. Seib and F. Brazier. Tom Riffle saw the 2 together again on Goose Island at noon. This was the first Regina record and at least the 12th Saskatchewan record.[1] [2] [3] [4]

[1] BELCHER, MARGARET. 1980. Birds of Regina. Sask. Natur. Hist. Soc. Spec. Publ. 12. 151 p.

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AUTUMN DIETS OF ELK IN THREE AREAS OF SASKATCHEWAN

HUGH M. HUNT, Dept. of Tourism and Renewable Resources, 2602 - 8th Street East, Saskatoon, Saskatchewan, S7H 0V7, and EARL R. WILTSE, Dept. of Tourism and Renewable Resources, 3211 Albert Street, Regina, Saskatchewan, S4S 5W6.

Versatility in habitat use and diet has enabled elk or wapiti (*Cervus elaphus*) to successfully inhabit many different regions of North America.[6] [2] The diverse nature of the diet of elk is amply demonstrated by Kufeld's review of 48 studies of elk food habits in which more than 300 plants eaten by elk are listed.[4] Collection of elk rumen samples in autumn from three areas in Saskatchewan provided an opportunity to investigate elk diets in this season and to determine if diet versatility was a feature of elk in different parts of their provincial range.

Study Areas and Methods

From 1972 to 1975, samples of rumen contents were taken from 51 elk from the West Block of the Cypress Hills Provincial Park, Moose Mountain Provincial Park, and the Porcupine Provincial Forest in Saskatchewan (Fig. 1). The West Block of the Cypress Hills Provincial Park has been described as 70% grassland dominated by rough fescue *(Festuca scabrella*), 20% forest dominated by lodgepole pine (*Pinus contorta*), trembling aspen (*Populus tremuloides*), and white spruce (*Picea glauca*), and the remaining 10% made up of willow (*Salix* spp.) communities, sedge (*Carex* spp.) meadows, and marsh communities.[7] Moose Mountain Provincial Park, in southeastern Saskatchewan, is primarily a poplar forest with aspen the predominant species. Also present are balsam poplar (*Populus balsamifera*), white birch (*Betula papyrifera*), and traces of green ash (*Fraxinus campestris*) and Manitoba maple (*Acer negundo*). The Porcupine Provincial Forest in east-central Saskatchewan is largely a hardwood forest of aspen, balsam poplar, and white birch although extensive mixedwood stands of aspen and white spruce also occur.

The rumen samples were from one male calf, 26 adult males, three female calves, 20 adult females and one animal of unknown sex and age. The distribution of the samples by area and year is given in Table 1. Samples were collected in the period 15 October to 18 November with most samples from elk killed during sporthunting seasons in the last week of October and the first week of November.

A 1.1 liter aliquot of rumen content was washed through a 5.66 mm mesh screen and the material remaining on the screen separated into its component fractions. Rumen components were identified macroscopically to the lowest taxonomic level possible; grasses were identified only to family (Gramineae) and fine material was sorted by forage class as unidentified herbaceous material or unidentified woody material. Volumes of the components were determined by water displacement for the 1972 and 1973 Cypress rumens; dry weights of the

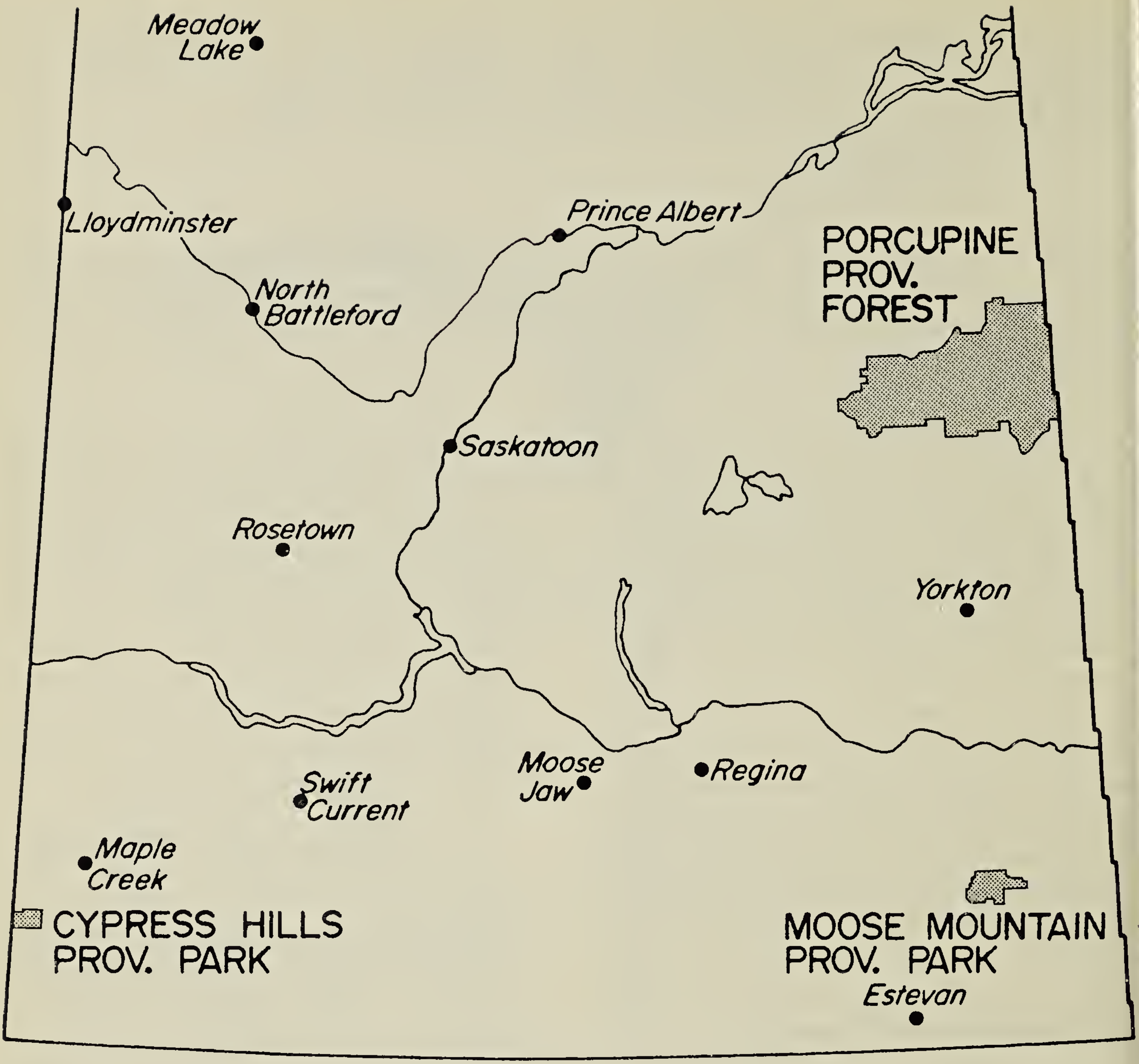

Figure 1: Location within Saskatchewan of the three study areas.

components were recorded for all other rumens after drying for 24-48 hours at 70°C.

Data for identified portions of the samples were grouped according to region by the aggregate percentage method regardless of sex or age class and method of component percentage determination.[5]

Results and Discussion

Graminoids (grasses, sedges) comprised over half the autumn diet of elk in the Cypress Hills but formed only a relatively minor part of the autumn diet of Moose Mountain and Porcupine Forest elk (Fig. 2). Woody browse was the principal component of the diet of Porcupine Forest and Moose Mountain elk making up about one-half and two-thirds, respectively, of the rumen contents; browse comprised slightly less than one-third of the diet of elk from the Cypress Hills. Agricultural crops constituted the second most important forage class for both the Moose Mountain and Porcupine Forest elk but were almost absent from the diet of Cypress Hills elk. Forbs comprised a minor portion of the diet of elk in all three areas.

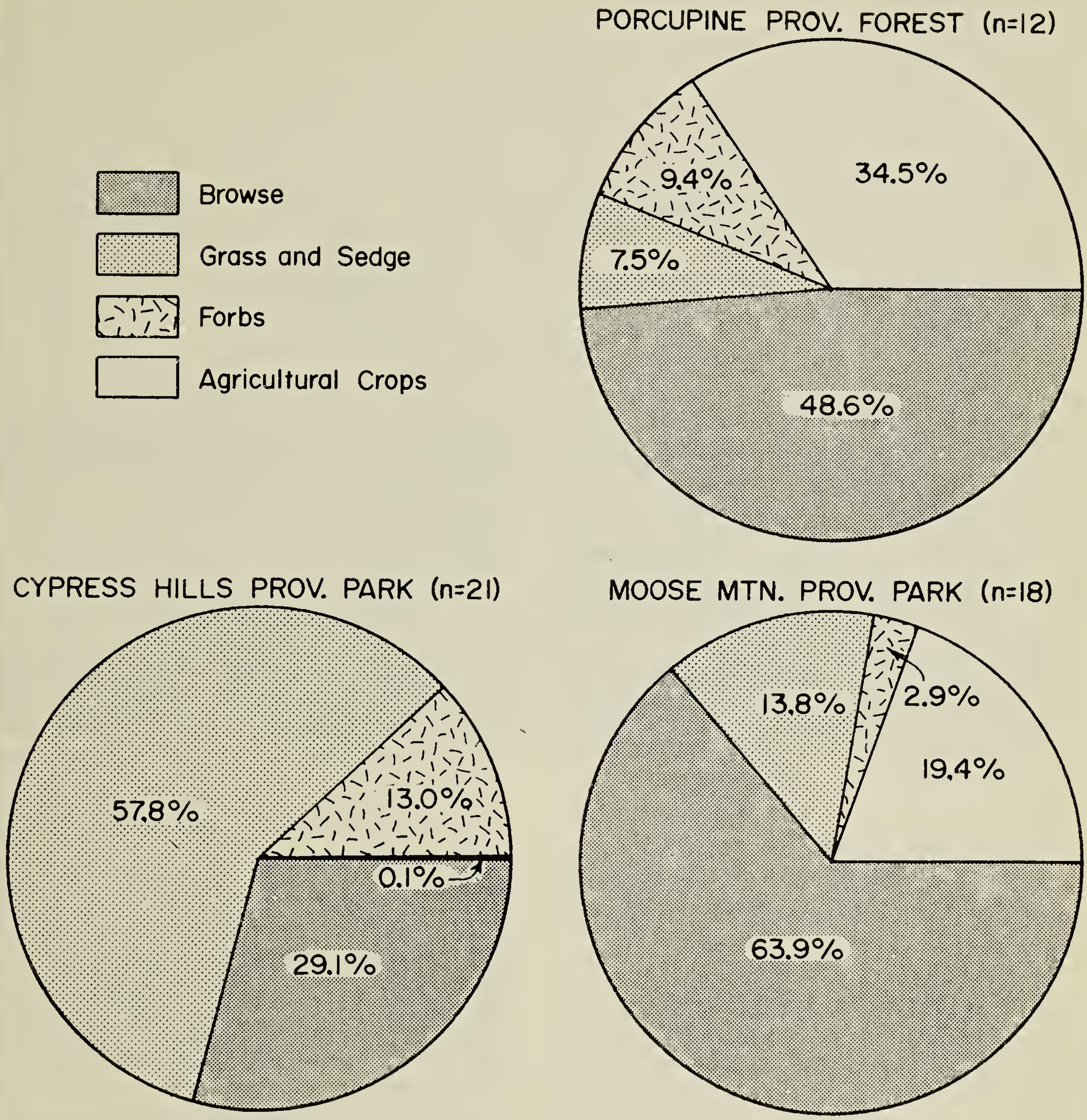

Figure 2: Composition of rumen contents from elk in autumn from three areas in Saskatchewan.

The predominance of grasses in the autumn diet of elk in the Cypress Hills resembles Kufeld's synthesis of elk diets in autumn for most of the western United States.[4] High woody browse utilization by elk in Moose Mountain and the Porcupine Forest is similar to browse used by elk in Riding Mountain National Park in Manitoba.[1] The Manitoba study and one from Saskatchewan, the only investigations of elk diet in the Boreal Forest Region of Canada, both demonstrated woody browse was the preferred forage of elk in the boreal forest throughout much of the year.[13] This contrasts to grasses being the major diet component of elk in the western United States.[4]

Within the broad forage classes, some food items were common to the three areas but for the most part, the individual components in the autumn diets differed significantly from area to area. Aspen, balsam

TABLE 1: Distribution of rumen samples by area and year.

	Area		
Year	Cypress	Moose Mountain	Porcupine
1972	5	—	—
1973	5	—	—
1974	—	5	—
1975	11	13	12
TOTAL	21	18	12

poplar, willow, saskatoon (*Amelanchier alnifolia*), rose (*Rosa* spp.), and snowberry (*Symphoricarpos* spp.) were eaten by elk in all three areas but only aspen was of particular importance in all areas in terms of frequency of occurrence and proportion of rumen contents. Snowberry appeared frequently in rumens from all areas but comprised a major part of the browse consumed only in Moose Mountain. Saskatoon was important in Moose Mountain and the Porcupine Forest, rose important only in the Cypress Hills, and balsam poplar and willow important only in the Porcupine Forest.

Other browse items and most forbs occurred in rumens from, or formed a significant part of the diet in, only one locale. Bearberry (*Arctostaphylos uva-ursi*), hoary sagebrush (*Artemisia cana*), and lodgepole pine were restricted to Cypress Hills rumens whereas bur oak (*Quercus macrocarpa*) and silverberry (*Elaeagnus commutata*) were restricted to Moose Mountain rumens. High-bush cranberry (*Viburnum trilobum*) and pin cherry (*Prunus pensylvanica*) were important forages only in the Porcupine Forest as was red-osier dogwood (*Cornus stolonifera*), although dogwood appeared in the Cypress Hills rumens as well. The only forbs to appear in rumens from all areas was American vetch (*Vicia americana*) although many forbs occurred in rumens from two areas. Several forbs typical of the Cypress Hills such as everlasting (*Antennaria* spp.), low larkspur (*Delphinium bicolor*), and small bedstraw (*Galium trifidum*) appeared only in the rumens from that area.

Agricultural crops comprised a significant part of the autumn diet of elk in both Moose Mountain and the Porcupine Forest; alfalfa (*Medicago sativa*), barley (*Hordeum vulgare*), and oats (*Avena sativa*) were the preferred forages common to both areas. Alfalfa was the only agricultural crop found in rumens from all areas. The lack of agricultural crops in Cypress Hills rumens is due to an almost complete absence of cultivated land in the extensive rangelands surrounding the West Block of the Cypress Hills. The high degree of utilization of agricultural crops in autumn by Moose Mountain and Porcupine Forest elk demonstrates the potential, and often real problem of elk depredation of crops in the surrounding cultivated lands, especially when harvesting is delayed by weather.

In general terms, elk in the West Block of the Cypress Hills Provincial Park in autumn can be described as grazers while elk in Moose Mountain Provincial Park and the Porcupine Provincial Forest are browsers. Differences in the relative proportions of the four broad forage classes

Elk *Gary W. Seib*

and in the individual food items presumably reflect differences in forage availability that result from habitat differences between the three areas. This diet versatility facilitates elk utilization of many diverse types of habitat.

Acknowledgements

This study was one segment of an investigation of the ecology of elk in Saskatchewan conducted by the Wildlife Research Division of the Department of Tourism and Renewable Resources. Sorting of the rumens was done by D. Janke, D. Arneson, B. Rafuse, R. Tennent, and D. Phillips. Assistance in preparation of the report came from D. Dobson, G. Duff, L. Koback, G. W. Pepper and H. Stelfox.

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A CONCENTRATION OF WHITE-TAILED JACK RABBITS

FRED W. LAHRMAN, Saskatchewan Museum of Natural History, Regina, Saskatchewan S4P 3V7.

During the winter of 1978-79 jack rabbits were seen in large numbers on the fields of the Canada Dept. of Agriculture Research Station, Regina, Saskatchewan, where they tended to gather in groups of 30 to 50 or more. This winter (1979-80) the rabbits gathered there again in similar numbers. This seems to be a local occurrence only. I would guess that the rabbits find these fields attractive because of the abundance of food in the various study plots at the station and the fact that the area is closed to hunting and snowmobiling.

On 23 February 1980, 92 jack rabbits were visible from one vantage point. They were grouped fairly close together with a few stragglers scattered about. No doubt there were others in the vicinity which I missed. On 2 March I counted 110 all bunched together in the same area. On 16 March 42 rabbits were seen. This does not necessarily mean that some had dispersed as later in the day I saw others running to the sanctuary of the field from the nearby Wascana Marsh where snowmobiles could be heard cruising around.

On 16 March there was some evidence of their brown summer pelage starting to appear as some had brown on the ears and faces and one had a veil of light brown on the back. During the afternoon a bitter cold March wind was blowing and it was curious to see all the rabbits facing in the same direction with their backs to the full force of the wind. None made any attempt to find a sheltered spot.

They were quite wary and any move I made in their direction would send them running in droves like antelope, kicking up a little blizzard of snow as they went.

One strange thing that I noticed about their behavior was that while jack rabbits usually are careful to conceal themselves during the daylight hours, none of the rabbits in these groups did so. They would spend most of their time sleeping huddled up in the open and often individuals within the group would stretch and yawn and hop about visiting back and forth.

FEARLESS JACK RABBITS

ROBERT KREBA, Saskatchewan Museum of Natural History, Regina, Saskatchewan S4P 3V7.

In connection with Fred Lahrman's report, I would like to describe an encounter of my own with this same "herd" of White-tailed jack rabbits during the Christmas Bird Count, 27 December 1978.

While walking east into the Wascana Country Club property adjacent to the Canada Dept. of Agriculture Research Station, I noticed a man and two boys with an Irish setter and a Labrador retriever. As the dogs ran ahead, they scared a few jack rabbits out of a patch of

White-tailed Jack Rabbits *Fred W. Lahrman*

grain that had been left standing. These dogs were in high spirits, yelping and barking and running in erratic zig-zags through the grain. And out came the hares, first a few, then some more, and some more, and so on. Somewhat amazed, I stopped and watched, and started counting. Eventually about 45 jack rabbits had been chased out. They stood around in various attitudes of annoyance and disgruntlement, while the dogs gamboled amongst them, chasing first one and then another of the rabbits for a few yards without seeming to be really interested in catching any one of them. The dogs seemed to be having a great time of it, while the rabbits seemed, frankly, bored. I could only assume that the rabbits and the dogs had come to some sort of an understanding.

I continued east along the Wascana Creek in hopes of scaring up something like a Short-eared Owl. When I reached the eastern boundary of the country club (without seeing any birds), I turned around to walk back along a line of spruce trees on the southern boundary. About halfway, I saw a fine flock of Sharp-tailed Grouse, and then I started meeting up with jack rabbits again. They stood around in groups of two's and three's, near the spruce, gazing idly in my direction as I approached. But they didn't move off, they stayed put. Feeling like an intruder, I moved on, hoping that they wouldn't be too offended by my trespassing. It almost seemed as though they had rented the country club for the off-season!

Then, on the far side of the spruce, I saw a sight that made me stop dead in my tracks. Out in the bare snow-covered field was an aggregation of 20 or 30 more jacks, loosely collected about a section of fence line. Right in the middle, perched on a fence post, was a Snowy Owl. I moved towards the spruce for a better look, displacing a couple of jack rabbits who at last moved away at this direct approach.

What I saw next was a repeat of the rabbit-dog manoeuvres, only this time the owl chased the rabbits. Off his pole he went, flapping and gliding over the jack rabbits, just a few feet above the ground. The rabbits played their part, running for a few yards and then stopping to watch the Snowy go after one of their fellows. This went on for about a minute, then the owl returned to his post. The rabbits relaxed and resumed whatever activity they had been involved in before being so rudely interrupted. Within ten minutes, I saw this action repeated twice more. Neither the owl nor the rabbits seemed to take this game at all seriously! I returned to my rendezvous, thoroughly perplexed.

Some of my comments, I realize, have an anthropomorphical bias, but the details of what actually happened are related exactly as they occurred. By the way, while I was watching the jack rabbits, one of my group of birders waiting for me to return saw the Short-eared Owl that I was looking for.

NATURE LIBRARY

BIRDS ON RECORDS: A PERSONAL SELECTION

ROBERT KREBA, Saskatchewan Museum of Natural History, Regina, Saskatchewan, S4P 3V7.

As a commercial enterprise, birds have been Big Business for several decades. Publishers are releasing a growing number of offerings for an audience that grows larger and more selective every year. Many of these are rehashes of previous efforts. A small portion may be truly worthwhile, offering an entertaining story, new information, and superior artwork or photography. And every year sees the publication of a few truly outstanding works, sumptuous in illustration and definitive in text, a true delight to both the eye and mind. The latter are unfortunately the most expensive and unobtainable for most of us. A recent sample, William T. Cooper and Joseph M. Forshaw's *The Birds of Paradise and Bower Birds* (1979) is offered for $150.00 U.S. Personally, I am awaiting the publication of the non-deluxe, economy edition, which should be available sometime in the next 10 years.

What this has to do with Birds on Records is that here the opposite holds true. The market is not yet glutted, and every addition to the portfolio offers, not repetition, but a new perspective on a theme that is far from exhausted. Prices overall are not exhorbitant, and often an album of recorded bird song costs less than the current offerings from our popular recording artists. Of my own collection of about 450 long-playing albums, over 30 are of birds or other natural sounds. Besides these, I have several recordings on 7-inch discs (though played at 33-1/3 rpm instead of the usual 45 rpm) and some that are available only on cassette tape. For the moment, I will be discussing about half of the full-length albums in my collection.

Perhaps the finest available series is that offered by the Federation of Ontario Naturalists. Three of these (Vol. 4, *Warblers: Songs of Warblers of Eastern North America,* Vol. 6, *Finches: Songs of Fringillidae of Eastern and Central North America,* and Vol. 8, *Thrushes, Wrens and Mockingbirds of Eastern North America*) are in a class of their own, aural field guides par excellence. These are invaluable tools for the observer dedicated to learning the voices of the birds he sees both in migration and on their breeding ground. They offer several different versions of the songs and calls of each species; comprising an incomparable collection of recordings for many difficult species. Besides being functional, all three albums make for very enjoyable easy listening.

Four other albums in the series are equally instructive, but are oriented regionally rather than taxonomically. Vol. 1, *Songs of Spring,* portrays the typical birds of southern Ontario and Quebec, although 19 of the 25 species featured are common in the prairie provinces. Vol. 2, *A Day in Algonquin Park* features birds but also includes amphibians, and even an insect or two. Perhaps the most aesthetically pleasing of the series, it presents the listener with the sounds to be heard in a full day at Algonquin Park, culminating in a magnificent evening chorus of Common Loons at the end of side two. Vol. 5, *A Day at Flores Moradas*, is an exotic excursion into the unfamiliar world of the Venezuelan ilanos. Even if you don't plan on going there, the record is a worthwhile visit, soothing, relaxing, and stimulating all at the same time.

Vol. 8 is of special interest to anyone living in the three prairie provinces. *Prairie Spring* is a veritable treasure, and is the most played album in my collection. Sixty-four species of birds are represented, along with four mammals, even including Hereford cattle! Side 1 deals with the birds of pothole and marsh, while Side 2 concentrates on the birds and mammals of prairie and parkland. Outstanding are the recordings of geese and ducks, the Sharp-tailed and Sage Grouse on their dancing grounds, and the grassland songbirds. The album ends with a haunting coyote serenade. I cannot imagine a more effective evocation of the Canadian plains, and cannot recommend this album enough. It is definitely a "must have."

All of these are currently available from the Blue Jay Bookshop for $6.95 each. Vol. 3 of the series, *Birds of the Forest*, is no longer available, and I have not heard it. A logical extension of the series, moving westward, would be a recording of the sounds of the mountain and coastal fauna of British Columbia.

Three Dover Records, produced by Donald J. Borror, are available, which are excellent buys at only $5.75 per album. *Common Bird Songs* features 60 species, 42 of which may be expected in the prairies. It also includes an illustrated 27-page commentary booklet, and the other two albums each have 32-page booklets. *Songs of Eastern Birds* also includes 60 species, 43 of which are found here. *Songs of Western Birds* presents another 60 species, many of which are found in the Canadian Rockies west to the Pacific coast (28 of these are known from Canada, and 20 occur in the southwestern prairies and the Cypress HIlls). These three records are a pleasure to listen to, and are useful aids to bird-song recognition as well.

I have two albums from ARA Records, produced by John William Hardy, Curator of Ornithology at the Florida State Museum. ARA-1, *Voices of Neotropical Birds*, is a representative collection of tropical American species ranging from partridges and parrots to a wide range of passerines. ARA-2, *The Wrens*, is a comprehensive survey of more than two-thirds of the 60+ species of wrens in the family Troglogytidae. Both of these records have an interesting commentary, centring on voice as related to speciation in birds, as well as once again being highly listenable. Some of the wrens are simply sensational and nearly unbelievable songsters, my favorite being the Musician Wren of the Amazonian rain forest. To the prospective visitor to the American tropics, they are invaluable. I have not heard a third album, *Sounds of Florida Birds*, but would recommend it based on the excellence of the two I have heard. All are available from the Bookshop for $10.95 apiece.

In the same vein, L. Irby Davis'

Mexican Bird Songs is a very useful introduction to the bird sounds of Mexico and Central America. It represents 74 species, none of which is known from Canada. The quality of the recordings is excellent, and the only criticism I can offer is that it is not a double album. Davis is an ardent student of bird vocalizations, and has also published *A Field Guide to Birds of Mexico and Central America* ($6.50 U.S.). In it he gives detailed descriptions of the songs and calls of these little-known species, based on many years of personal observations in the field. The current price of the album is not available, but inquiries may be directed to the Blue Jay Bookshop.

The Peterson Field Guilde Series offers two albums, *A Field Guide to Bird Songs* and *A Field Guide to Western Bird Songs*, which are in many ways indispensable. These include recordings of almost all of the species described in the Eastern and Western bird guides. Their main advantage is that they include more species overall than anything else currently available, many species not being included in any other recordings. The Eastern album includes 300+ species (at $32.95 for the double album or double cassette tape), and the Western album 500+ species (at $34.95 for the triple album and $39.50 for the triple cassette tape). Their main drawbacks are their price, and the fact that each species is represented by only 15-20 seconds of songs and calls. This allows for little or no time to explore differences in dialect or song variation, but in many cases is better than nothing.

Lastly, the National Audubon Society and the Cornell Laboratory of Ornithology have produced a truly magnificent double album, *Beautiful Bird Songs of the World*. Fifty species have been carefully selected to include the most impressive virtuosos of the avian world. North America is represented by seven species, five of which occur in Canada. It is nice to see our own prairie favourite, the Western Meadowlark included in the company of such as the Nightingale, Skylark, Hermit Thrush and Superb Lyrebird. Over all, the thrushes take top honours, being represented by 24 species. A 14-page booklet is included, with full colour paintings of all species by renowned bird artist Arthur Singer. The price for the set is about $25.00, and is well worth it.

Hopefully, this review will stimulate you to sample some of these recordings. For a small investment, the variety and beauty of bird song can be yours whenever you want to hear it, no matter what the weather or the season. Listen, learn, and enjoy!

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LETTERS

MUSHROOM CORRESPONDENCE REQUESTED

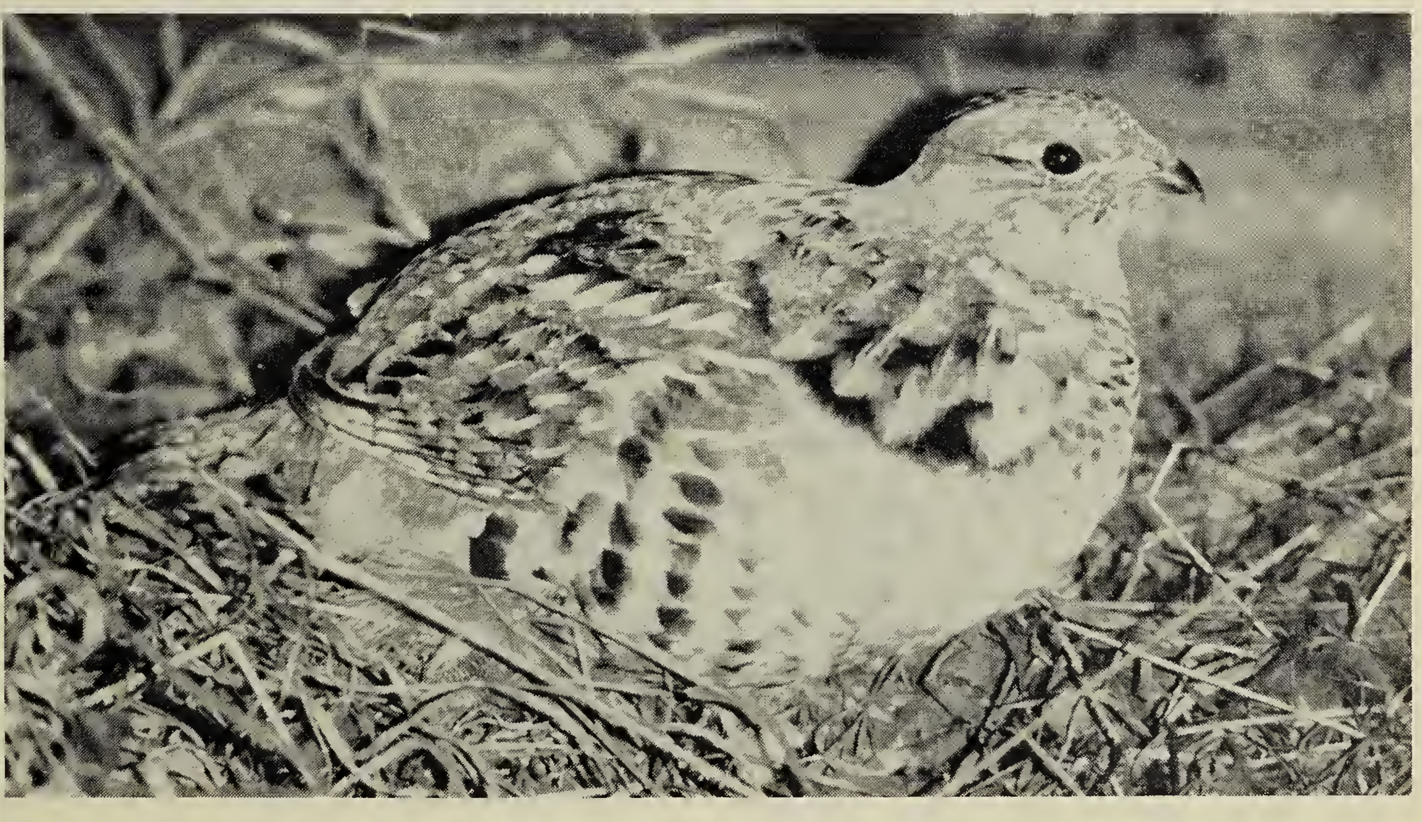
I would be interested in corresponding with anyone who collects, studies or photographs mushrooms and related fungi in the Prairie Provinces and British Columbia. I have been studying and eating wild mushrooms, mostly in Saskatchewan, for three or four years.

I would like to hear from people with similar interests to compile information on distribution of various species, and also make contacts for field investigations in various parts of the province. If interest seems to warrant, I would be interested in starting an occasional newsletter to be distributed among amateur mycologists. — *Robert Kreba,* Saskatchewan Museum of Natural History, Wascana Park, Regina, Saskatchewan S4P 3V7.

CRAZY GROUSE COMMENT

I was interested to read about other records of Ruffed Grouse crazy flights, as reported by Dennis Fast (*Blue Jay* 37:219-220), and was appreciative of his attracting some dozen of these birds at a time to his winter feeding station.

Since his report was written "in response" to my earlier one (*Blue Jay* 36:193-199), I wish to correct what may create a misleading impression for the reader, particularly if he or she had not read my article. While I did speculate that grouse may mistake a white house for sky, the intent of this speculation was not to show that this was so but rather to indicate



Ruffed Grouse *Fred W. Lahrman and Lorne Scott* that it was *not*. The speculation was originally made elsewhere (J. A. Knight. 1947. Ruffed Grouse. Alfred A. Knopf, New York), as stated in a still earlier article of mine (*Blue Jay* 29:121-124).

I am pleased that Fast's observations of the Ruffed Grouse's flying ability corroborate the conclusion that I had reached: that its limited manoeuverability (coupled with impulsive flight habits) is not sufficient for it to cope with man-made (and some other) obstructions. Now that this has been pointed out as a possible explanation, other observers may also look to less exotic reasons than they have in the past in studying this phenomenon.

Since my last article was cited in an American publication (*Wildlife Review* 174:154), I have received requests for it from biology departments or wildlife research stations in Vermont, Wisconsin, South Dakota, Oregon, West Virginia, Ohio, New Mexico, Alberta, and Ontario, and the requests are still coming in. — *Victor C. Friesen*, Box 65, Rosthern, Saskatchewan S0K 3R0.

MOURNING OWL?

I have a friend about 70 years old who lives on the Thunderchild Indian Reserve, on the west shore of Turtle Lake (north of Livelong). She has loved birds and nature all of her life and I recently introduced her to *Blue Jay*. Her name is Catherine Okanee.

She related the tale (below) last summer on one of my trips to see her. She is very keen to know of myth and legend about birds other than those of the plains Cree. I am familiar with the Coastal Indian belief about owls meaning death if you hear them say your name. Do other readers have other tales?

Here is her story — verbatim:

"It was in April, late in April when I heard the owl. I heard a loud wail almost like a child in trouble. When I got closer to the sound, I realized it came from up high in the trees. Then I saw a big horned owl. It flew away. It was the big grey owl. It had called my name very clearly 'Cath-er-ine. Catherine'.

"Several days later I was in the same area and found the remains of an owl not yet eaten, lying in the grass. (This was along a cut-line for the power.) It was a place where I threw away bits of fish and things for the wild animals to eat.

"I wonder — was it the mate of the bird I saw? Do owls mourn their mates by calling like this? It said my name so clearly".

It is an Indian belief that owls bring bad luck — especially to old people. A young mother will sometimes tell her wakeful child "Hush, don't make a noise or an owl will put you in his ear and fly away".

The owl was not banded. Owls frequently nest within a few hundred feet of her cottage, but no nest was evident in 1979. *Muriel Carlson*, 406 Spruce Drive, Saskatoon, Saskatchewan, S7N 2N4.

PARTIAL ALBINO EVENING GROSBEAK

On 18 December 1978, while I was living in Sprague, Manitoba, I had a partial albino Evening Grosbeak visit the bird feeder in my backyard. I was able to take a number of photographs, some of which are unclear due to the plastic storm window in my kitchen. The bird returned again on 22 December and was also seen at other feeders around town. The bird seemed to mingle well with the other grosbeaks of normal colouration. The bird had a pinkish yellow bill, dark eyes and tinges of yellow around its head and back. — *Paul J. Krahn,* Manitoba Dept. Natural Resources, The Pas, Manitoba.

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